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Report title		Review IWMP for the Saldanha Bay Municipality					
Document ID			Project number		111504		
File path		P:\Projects\111504 Invest & upgrad Vredenberg Landfill\03 PRJ Del\5 DEL\IWMP\FINAL Saldanha Bay IWMP V3 14 March 2017.docx					
Client			Client contact				
Re v	Date	Revision details/status	Prepared by	Author	Verifier	Approver	
1	5 July 2016	Content review	B Galego	K Pretorius	B Galego	N Mannie	
2	15 December 2016	Draft IWMP	B Galego	K Pretorius	B Galego	N Mannie	
3	14 March 2017	Final IWMP	B Galego	K Pretorius	B Galego	N Mannie	
Current revision		3					

Approval			
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Saldanha Bay Municipality Integrated Waste Management Plan 2017

Date 14 March 2017

Reference 111504

Revision 3

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Definitions

Definitions listed below that are defined in terms of the National Environmental Management: Waste Act, 2008 has the same meaning as in the Act and are listed below for ease of reference.

Listed terms:	Description
Accreditation	Accreditation for stakeholders is necessary to prove that they are registered and meet a general standard of quality with a recognised institution.
Aquaculture	Cultivation of aquatic animals and plants, especially fish, shellfish, and seaweed, in natural or controlled marine or freshwater
Basic waste management service	A basic waste management service means to have access to at least once-a-week refuse removal services.
Building and demolition waste	Building and demolition waste means waste, excluding hazardous waste, produced during the construction, alteration, repair or demolition of any structure, and includes rubble, earth, rock and wood displaced during that construction, alteration, repair or demolition.
Buy-back Centre	Buy-back Centre means a location where discarded materials can be exchanged for money for further transportation to a recycling facility. The price for the waste is determined by the current markets and the quantities of waste.
Business Waste	Business Waste means waste that emanates from premises that are used wholly or mainly for commercial, retail, wholesale, entertainment or government administration purposes.
Compost	Compost is decayed organic material used as a fertilizer for growing plants to which no plant nutrients have been added and that is free of substances or elements that could be harmful to man, animal, plant or the environment
Composting	Composting means biologically degrading organic materials in the presence of oxygen, yielding carbon dioxide, and heat and stabilised organic residues that may be used as a soil additive.
Container	Container means a disposable or re-usable vessel in which waste is placed for the purposes of storing, accumulating, handling, transporting, treating or disposing of that waste, and includes bags, bins, bin-liners and skips.
Disposal	Disposal means the burial, deposit, discharge, abandoning, dumping, placing or release of any waste into, or onto, any land.
Domestic waste	Domestic waste means waste, excluding hazardous waste, that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes, which include: <ul style="list-style-type: none"> (a) garden and park wastes (b) municipal waste (c) food waste
Designated Waste	Designated Waste Management Officer means a person in the employ of the Council authorised to be a designated officer in terms of (Section 10(3)) to be a

Listed terms:	Description
Management Officer	designated officer with the responsibility set aside in (section 10 (5)) of the NEMWA, Act 59 of 2008
General waste	<p>General waste means waste that does not pose an immediate hazard or threat to health or to the environment, and includes—</p> <ul style="list-style-type: none"> ■ Domestic waste; ■ Building and demolition waste; ■ Business waste: and ■ Inert waste.
Garden waste/ green waste	Garden waste or green waste is meant as biodegradable waste material generated from the likes of a typical garden such as flower cuttings, hedge trimmings, wood pieces from pruning etc.
Hazardous waste	Hazardous waste means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment and includes hazardous substances, materials or objects within business waste, residue deposits and residue stockpiles.
High income group	High income group means households which fall within the Living Standard Measure (LSM) of 5 – 10).
Inert Waste	<p>Inert Waste means waste that—</p> <ul style="list-style-type: none"> ■ Does not undergo any significant physical, chemical or biological transformation after disposal; ■ Does not burn, react physically or chemically biodegrade or otherwise adversely affect any other; ■ Matter or environment with which it may come into contact; and ■ Does not impact negatively on the environment, because of its pollutant content and because the toxicity of its leachate is insignificant.
Integrated Waste Management Plan	Integrated Waste Management Plan means a plan prepared in terms of section 12 of NEMWA.
Landfill	Waste disposal facility means any site of premises used for the accumulation of waste with the purpose of disposing of that waste or on that premise.
Low income group	Low income group means households which fall within the Living Standard Measure (LSM) of 1 – 5
Materials Recovery Facility	Materials Recovery Facility means a centre for the reception and transfer of materials recovered from the waste stream for recycling. Materials are sorted by type and treated (cleaning and compression).
Organic waste	A carbon-based material of animal or plant origin (that is defined as waste in terms of the South African gazetted National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008:)) that naturally enhances fertility of soil

Listed terms:	Description
	through a natural degradation process (natural occurring fertilizer) but excludes human made organic chemicals (such as solvents, chemicals and cleansing agents) and naturally occurring organic chemicals which have been refined or concentrated by human activity (such as oil, petroleum, diesel and tar products). "Organic Waste" will generally comprise materials that can be accepted for disposal at a licensed municipal general waste landfill facility (i.e. excludes infectious, poisonous, health-care and hazardous organic wastes)".
Pollution	<p>Pollution means any change in the environment caused by-</p> <ul style="list-style-type: none"> ■ Substances; ■ Radioactive or other waves; or ■ Noise odours, dust or heat, emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person, or organ of state, where that changes has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in future.
Recovery	Recovery means the controlled extraction of a material or the retrieval of energy from waste to produce a product.
Recycle	Recycle means a process where waste is reclaimed for further use, which process involves the separation of waste from a waste stream for further use and the processing of that separated material as a product or raw material.
Re-use	Re-use means to utilise articles from the waste stream again for a similar or different purpose without changing the form or properties of the articles.
Separation at Source	Separation at Source means the separation of recyclable material from other waste at the point and time the waste is generated. This includes separation of recyclable material into its component categories and may include further separation within each category.
Treatment	Treatment means any method, technique or process that is designed to— (a) change the physical, biological or chemical character or composition of a waste; or (b) remove, separate, concentrate or recover a hazardous or toxic component of a waste; or (c) destroy or reduce the toxicity of a waste, in order to minimise the impact of the waste on the environment prior to further use or disposal.
Waste	<p>Act No. 26 of 2014: National Environmental Management: Waste Amendment Act, 2014</p> <p>“‘waste’ means—</p> <ul style="list-style-type: none"> (a) any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 to this Act; or

Listed terms:	Description
	<p>(b) any other substance, material or object that is not included in Schedule 3 that may be defined as a waste by the Minister by notice in the Gazette, but any waste or portion of waste, referred to in paragraphs (a) and (b), ceases to be a waste—</p> <ol style="list-style-type: none"> once an application for its re-use, recycling or recovery has been approved or, after such approval, once it is, or has been re-used, recycled or recovered; where approval is not required, once a waste is, or has been re-used, recycled or recovered; where the Minister has, in terms of section 74, exempted any waste or a portion of waste generated by a particular process from the definition of waste; or where the Minister has, in the prescribed manner, excluded any waste stream or a portion of a waste stream from the definition of waste.
Waste Avoidance	Waste Avoidance aims to achieve waste minimization therefore reducing the amount of waste entering the waste stream. This is especially important where the recycling, recovery, treatment or disposal is problematic.
Waste generator	<p>A waste generator will be treated as a waste holder as defined in the National Environmental Management: Waste Act. 2008, Act No. 59, 2008:</p> <p>A holder of waste must, within the holder's power, take all reasonable measures to—</p> <ol style="list-style-type: none"> avoid the generation of waste and where such generation cannot be voided, to minimise the toxicity and amounts of waste that are generated; reduce, re-use, recycle and recover waste; where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner; manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through noise, odour or visual impacts; prevent any employee or any person under his or her supervision from contravening this Act; and prevent the waste from being used for an unauthorised purpose.
Waste Hierarchy	The management hierarchy concept provides a systematic and hierarchical approach to integrated waste management, addressing in turn waste avoidance, reduction, reuse, recycling recovering treatment and the safe disposal of waste as a last resort.
Waste Management Services	Waste Management Services means waste collection, treatment, recycling and disposal services

Listed terms:	Description
Waste Minimisation	Waste Minimisation means techniques used to keep waste generation at a minimum level in order to divert materials from landfill. The term waste minimisation is also applied to recycling and other efforts to reduce the amount of waste going into the waste stream.
Waste Transfer Facility	Waste Transfer Facility means a facility that is used to accumulate and temporarily store waste before it is transported to a recycling, treatment or waste disposal facility.
Wood waste	Wood waste is a material from pruning or tree removal operations that would otherwise be discarded in a landfill.

Acronyms

<i>DEA&DP</i>	Department of Environmental Affairs and Development Planning
<i>DWAF</i>	Department of Water Affairs and Forestry
<i>EIA</i>	Environmental Impact Assessment
<i>EMP</i>	Environmental Management Plan
<i>IDP</i>	Integrated Development Plan
<i>IPWIS</i>	Integrated Pollutant and Waste Information System
<i>IWMP</i>	Integrated Waste Management Plan
<i>IDZ</i>	Industrial Development Zone
<i>GDP</i>	Gross Domestic Product
<i>NEMA</i>	National Environmental Management Act No 107 of 1998, as amended
<i>NEMWA</i>	National Environmental Management: Waste Act No 59 of 2008, as amended
<i>NWMS</i>	National Waste Management Strategy of 2011
<i>PPP</i>	Public Private Partnerships
<i>SDF</i>	Spatial Development Framework
<i>SLA</i>	Service Level Agreement
<i>SBM</i>	Saldanha Bay Municipality
<i>WIS</i>	Waste Information System

1 Executive summary

Aurecon SA was appointed by the Saldanha Bay Municipality (SBM) to compile 3rd generation Integrated Waste Management Plan. The Integrated Waste Management Plan (IWMP) will contribute to a better understanding of the total infrastructure needs within the community and will assist the Municipality in decision-making to determine the overall infrastructure maintenance and replacement costs. The IWMP will also guide the Municipality in selecting the most appropriate funding mechanism.

Several plans contribute to the development of the Integrated Development Plan (IDP) and Comprehensive Municipal Infrastructure Plan (CMIP) of which the IWMP is one of them. An IWMP is a high level strategic document that looks broadly at the waste management offering within a defined area and if necessary, proposes further steps that the responsible authority might consider taking to achieve a comprehensive integrated waste management service. The development of the plan included the following steps:

1. Background study.
2. Status quo analysis.
3. Establishing strategic objectives and priorities.
4. Gap analysis.
5. Development of goal, objectives and strategies.

In the 2011 IWMP, goals for improved waste management service delivery were set and recommendations on how to achieve the goal were made. The table below presents a summary of the objectives and status of implementation.

Implementation plan 2011	
IWMP Action 2011	Status 2016
Public and awareness campaigns	EPWP utilised to inform and educate the public specifically the informal settlements.
Quantifying prevention	A waste information system has been implemented. A GIS need to be populated and maintained.
Post collection services	A service provider is appointed to operate the MRF.
Post collection composting	A feasibility study need to be undertaken
Engineered waste disposal facilities	Additional area is identified for the expansion of the Vredenburg waste disposal facility
Monitoring of the waste disposal	All waste destined for disposal are monitored for compliance SBM disposal facilities
Collection service review	Waste collection services are continuously reviewed to make sure it is efficient and value for money.
Data compilation	Volumes are recorded at the Vredenburg waste disposal facility. A Weigh pad has been installed at the Langebaan waste disposal facility.

Implementation plan 2011	
IWMP Action 2011	Status 2016
Cleansing	Community services is responsible for street cleansing. SBM attend to illegal dumping as and when required and hot spots are cleaned on regular basis per program

The desired end state identified priorities and goals that SBM should attain with regards to waste management. Using the information collected on the historical and present waste management situation the following strategic goals for the IWMP were developed:

Goal 1: Promote recycling and recovery of waste

To implement sustainable waste minimisation, reuse, recycling and recovery programmes through strategic interventions including the promotion of composting, waste-to-energy and other reuse and recycling initiatives supported by introduction of waste separation at source programmes. Programmes should contribute towards uplifting the quality of life of the people within the municipality by ensuring a clean environment and by identifying, promoting and supporting potential job opportunities within the sector

Objectives:

- Establish Community drop-off centres with skips/containers for different waste streams at municipal facilities.
- Separation or segregation of waste stream at source to reduce the waste disposed to landfill by 20% (17 130t per year).
- Encouragement of co-operatives responsible for recycling and implementation of appropriate economic instruments and other financial incentives.
- Reuse of garden waste and building material.
- Develop waste avoidance guidelines.

Target:

- Short term - 20% reduction of waste to landfill by 2018
- Medium term – 30 % reduction of waste to landfill by 2019
- Long term – 40% reduction of waste to landfill by 2020

Focus Area	Current Status	Mitigation Measures	Desired State
Community drop-off centres for recyclable material	No community drop-off centres for recyclable items. Vredenburg MRF contractor (Wastegro) in place.	Establish drop-off centres for all recyclables materials at existing waste infrastructure (e.g. waste transfer stations) for plastic, paper, glasses, builder's rubble, etc. Identify and establish drop off points at public offices within each cluster	6 Community drop-off centres with skips/ containers for different waste streams at SBM landfill and other Drop off points at public offices within each cluster
Separation of waste at source.	Two-bag collection system in place in Langebaan.	Extend separation-at-source to rest of SBM.	Separation or segregation of waste stream at source to reduce waste to landfill by 20% by 2018.
Co-operatives/SMMEs	No known co-operatives in place to aid recycling initiatives.	Encourage Co-operatives	Co-operatives responsible for recycling
Reuse of garden waste and building rubble	Chipping of garden waste at Vredenburg landfill.	SBM should investigate the reuse of building rubble and undertake market survey (both internal and external). SBM should investigate composting of garden waste. Appoint EPWP workers to assist with waste recovery. Appoint a recycling contractor to oversee project	Equipment and facilities that are adequate for: Composting: Chipper Tractor with bucket loader or front end loader Building rubble: Crushed material to be used as cover material

Focus Area	Current Status	Mitigation Measures	Desired State
Build capacity to improve waste recovery initiatives	Limited waste recovery initiatives implemented	<p>Appoint EPWP workers to assist with waste recovery.</p> <p>Appoint a recycling contractor to oversee project</p> <p>Establish a waste forum for all the role players in SBM</p>	Increased waste recovery

Goal 2: Ensure the effective and efficient delivery of waste services

To promote and ensure effective delivery of waste services to all waste generators within the municipalities by extending appropriate waste services to all un-serviced areas and continually improving the level of service given in a safe and clean environment.

Objectives:

- Funded and filled posts.
- Businesses/industries responsible for waste services (receptacles)
- Community based services should be rendered to areas where the municipality have no capacity
- No illegal dumping

Target:

- All households within the municipality must receive a basic level of waste service according to waste level National/Provincial standards in safe and clean environment.

Focus Area	Current Status	Mitigation Measures	Desired State
Institutional arrangement	<p>New organisational structure is approved in 2013.</p> <p>Insufficient human resources due to vacant and unfunded critical posts (e.g. driver/workers).</p>	<p>Funding of critical posts.</p> <p>Filling of vacant posts.</p> <p>Continuous training of personnel.</p> <p>Review Organisational structure (and/or certain post profiles) to include law enforcement activities;</p>	Institutional capacity and trained human resources to effect all aspects of waste management services

Focus Area	Current Status	Mitigation Measures	Desired State
Illegal dumping	Inadequate law enforcement and services to prevent illegal dumping (cleared by SBM, often from outskirts of informal settlements)	<p>Provide a waste collection service for indigent areas in SBM</p> <p>Train/Appoint personnel for law enforcement.</p> <p>Enforce new by-laws and investigate/ determine the hot spots.</p> <p>Determine and monitor hot spots.</p> <p>Educate community.</p> <p>Set up sign boards prohibiting illegal dumping and where waste can be disposed of legally</p>	No illegal dumping
Route planning	Refuse collection routes per service area are planned per day	Revisit (redesign) and Implementation of a GIS route planning model	Proper GIS route planning
Fleet	Some fleet vehicles are old and/or in poor condition	Replace old fleet with the appropriate vehicles and increase number of vehicles. Diversify fleet for specific use.	Sufficient and maintained fit-for-purpose vehicles available 8 hours per day
Businesses/ industries/ New developments	Waste management plans are not available for businesses / industries / new developments	Develop waste management plan	Waste Management plans
Collection efficiencies	Collection vehicles travel large distances to landfill despite presence of	Move towards transfer stations model	Implementing a second shift

Focus Area	Current Status	Mitigation Measures	Desired State
	waste transfer stations.		Temporary storage of waste at transfer stations

Goal 3: Ensure that legislative tools are developed to deliver on the Waste Act and any other applicable legislation

To ensure that legislative tools are developed and enforced.

Objectives:

- Implemented waste management policy
- Implemented by-laws

Target:

- To prevent illegal dumping increase enforcement of by-laws by 20%.

Focus Area	Current Status	Mitigation Measures	Desired State
Waste management policy	Draft Waste policy developed.	Approve waste management policy.	Implemented waste management policy
Waste By-law	Outdated by-laws	Update by-laws	Implemented by-laws

Goal 4: Sound budgeting and financing of waste management services

Sound budgeting and financial management for waste management services to ensure that revenue expenditure for all services (or service categories) equals the revenue generated.

Objectives:

- Tariffs should be developed for all (new) waste management activities.
- The Municipality must be able to determine its economic sustainability and therefore establish long-term priorities

Target:

- Cost reflective tariffs to be implemented by 2017/2019

Focus Area	Current Status	Mitigation Measures	Desired State
Tariffs	SBM has an approved tariff structure for waste disposal at the landfill site, collection and removal	Undertake detailed financial investigation to determine the non-payment for waste management services rendered as well as services with an over-recovery.	Tariffs should be developed for all waste management activities to recover costs.
Cost recovery	Disparity between income and expenditure for refuse removal and landfill sites.	Enforce approved tariffs for waste management services rendered to improve collection rates.	Recovery of cost for waste management services rendered

Goal 5: Ensure the safe and proper disposal of waste

To treat and safely dispose of waste through Best Practicable Environmental Option (BPEO) interventions aimed at saving landfill airspace and reducing the potential negative impacts on the environment;

Objectives:

- Develop and implement a waste treatment and disposal strategy that will include but not limited to the following:
 - Compliance of all waste treatment and disposal facilities with relevant legislation for their development and permitting, operation and closure.
 - Addressing long term capacity needs of the municipality.
 - Explore alternative treatment and/or disposal options.

Target:

- The percentage increase in volume of waste disposal to landfill should not exceed its potential population.

Focus Area	Current Status	Mitigation Measures	Desired State
HCRW	HCRW waste is dumped illegally on occasions	Ensure that HCRW waste is reported to the relevant authorities if disposed of illegally.	Appropriate disposal of HCRW
Hazardous Waste	Hazardous waste is dumped illegally on occasions	Ensure that hazardous waste is reported to the relevant authorities if disposed of illegally.	Appropriate disposal of hazardous waste
Langebaan waste disposal facility	Operational compliance	SBM should take steps to formalise the site's use as a transfer station.	Full compliance with relevant

Focus Area	Current Status	Mitigation Measures	Desired State
	challenges include insufficient buffer. Remaining airspace is unknown. Primary use is as a transfer station.		legislation and permit conditions. Rigorous implementation of waste minimisation initiatives.
Transfer station	Several transfer stations, some in close proximity to each other.	Identify and develop possible locations for two new transfer stations in Langebaan and St Helena Bay to address imbalances with regard to service delivery.	System of well spread transfer stations to limit travel distances to landfill (and associated transport cost).
Tyres	Tyres are dumped illegally on occasions	Ensure that tyres are reported to the relevant authorities (REDISA) if disposed of illegally.	Monitor and report tyres dumped illegally Compliance with tyre regulations. Generators register with REDISA.

Goal 6: Education and awareness

To raise awareness about waste management, including treatment and disposal impacts and options, and building capacity in support of waste minimisation, reuse, recycling and recovery initiatives;

Objectives

- Develop and implement a communication and public awareness plan that encourages minimisation, reuse, recycling, and recovery and discourages illegal dumping and littering, thereby minimising the negative impacts of waste on the environment including the quality of life of people themselves. This IWMP will include among others the following:
 - Capacity building programmes for internal members of staff within the municipality.
 - Awareness and education programmes for the broader community.
 - Mechanisms of forming partnerships with different stakeholders in order to expand the reach and impact of the awareness campaigns undertaken.

Targets

- 25% of schools within the municipality have established waste minimisation programmes and/or other waste related projects by 2018.
- Initiate programmes that translate the objectives of provincial and national programmes geared towards encouraging cleaner environments and responsible behaviour towards the environment such as the Bontle ke Botho and the 'Cleanest Town' competitions to other stakeholders and the broader community.

- Initiation and operation of other awareness campaigns involving an additional 20% of the population of the municipality by 2018.

Focus Area	Current Status	Mitigation Measures	Desired State
Education and awareness	<p>Limited education and awareness campaigns.</p> <p>Inadequate resources (personnel, equipment)</p>	<p>Implementation of an increased clean-up campaigns, education awareness at schools and the community regarding the impact of waste.</p> <p>Appoint a Communications Officer to manage education and awareness campaigns.</p> <p>Add waste management awareness to SBM communication strategy</p>	A well-educated and well-informed community in regards to the impacts of waste on their health and the environment.

Goal 7: Compliance and enforcement

To achieve compliance to the municipal waste management by-laws through effective enforcement including prosecution in cases of non-compliance.

Objectives:

- Enforcement of waste by-laws and relevant legislation.
- Accurate record and efficient data management of waste volumes and waste types collected, recycled and disposed.

Target:

- Achieve 80% of compliance by all waste management activities

Focus Area	Current Status	Mitigation Measures	Desired State
Enforcement of relevant legislation	<p>Inadequate provisions are made on the proposed organisational structure for waste management by-law enforcement.</p>	<p>Provide for law enforcement function on the organisational structure.</p> <p>Law enforcement as a function should be</p>	An institution where there enough resources to enforce waste management by-laws.

Focus Area	Current Status	Mitigation Measures	Desired State
		<p>addressed as a function of education and awareness.</p> <p>Identify and train existing personnel in by-law enforcement.</p>	
Integrated Pollutant and Waste Information System (IPWIS)	An IPWIS has been implemented and SBM is reporting waste volume and characteristics monthly.	Expand waste information recorded collection to include recyclable materials (from MSW) reclaimed off landfills.	Accurate record and efficient data management of waste volumes and waste types collected, recycled and disposed.
Audits	Auditing of SBM waste disposal facilities and waste transfer stations as per license/ permit/ operating conditions are conducted quarterly internally and bi-annually externally	<p>Implement audit recommendations to ensure compliance</p> <p>Report audit findings to relevant authority</p>	Compliant SBM waste disposal facilities and waste transfer stations.

2 Scope of plan

The Saldanha Bay Municipality (SBM) appointed Aurecon to compile their 3rd generation Integrated Waste Management Plan (IWMP) for the Engineering and Planning Services Department of the Municipality. As required by the National Waste Management Strategy (NWMS) 2011 and the Integrated Development Plan (IDP) process all municipalities are obliged to develop an IWMP and review it every five years. SBM is reviewing the 2011 IWMP (JPCE, 2011) a year earlier than required because the 2011 IWMP is a draft report that has not been approved by council.

The plan covers all 14 wards of the Municipality, covering St Helena Bay, Jacobsbaai, Langebaan, Paternoster, Saldanha, Hopefield and Vredenburg. It reviews services currently rendered and sets goal to be achieved in order to meet the requirements of the NEWMA (2008), as amended and the NWMS (2011).

2.1 Overall aim and goals

The aim of the IWMP is to ensure that the Municipality provides waste management services that are compliant with the National Environmental Waste Management Act of 2008, as amended and NWMS (2011) to communities. The goals set focus on minimising waste that is disposed at the landfill site by encouraging waste minimisation, re-use and recycling.

2.2 IWMP Responsibilities

- The National Waste Management Strategy (2011) allocated the following responsibilities for IWMP:
- The National Department of Environmental Affairs (DEA) to draft and promulgate regulations and guideline documents for integrated waste management planning for all waste types.
- The Provincial Environmental Departments to develop hazardous waste management plans and prepare provincial environmental and waste management plans. The municipal and industry IWMP's should incorporate and align their plans with provincial IWMP. These will be submitted to the Central Executive Committee for approval, which will facilitate inter-provincial coordination, particularly in relation to planning for facilities for treatment and disposal of waste.
- Local Government to develop and submit plans for integrated general waste management to the respective provincial environmental departments.
- Waste management plans for industrial waste that is disposed of at private and/or dedicated disposal facilities, to be prepared by the developers/owners and submitted to the respective provincial environmental departments.

2.3 Waste Management Principles

Underlying principles or factors for this IWMP are as follows:

Principle	Description
The 'polluter pays principle'	<p>The National Environmental Management Act, (NEMA), Act 107 of 1996, states that all costs associated with the management of waste should be borne by the persons who generated the waste. Such costs may include the following:</p> <ul style="list-style-type: none">■ Waste minimization;■ Waste separation;

Principle	Description
	<ul style="list-style-type: none"> ■ Containing, treating and disposing of waste; and ■ Rectifying environmental harm caused by waste.
Cradle to grave	This is a process where a waste generator is responsible for and develops intervention programmes throughout the lifecycle until final disposal.
Cradle to cradle	The concept of cradle-to-cradle is different from cradle to grave in that each part of a product is made with its entire life cycle in mind. Closed-loop recycling reduces the demand for raw materials and the fuel to produce a new product. Cradle-to-cradle materials are either biologically consumable, where they can be returned straight to the Earth, or technically reusable, where the materials can be reused or placed directly back into the production cycle
Co-ordination	This is a process where a waste generator ensures that waste management is integrated across all sectors of the organization
Capacity building and education	To successfully implement its IWMP the SBM recognizes the need to ensure the development of skill, capacity and understanding of its employees, Retailers and other stakeholders for effective participation in achieving integrated waste management.
Accountability	The SBM is responsible for environmental policy formulation, monitoring and enforcement. This will ensure accountability for waste generated and managed.
Ensuring Sustainable Development	This IWMP need to achieve a better balance between economic prosperity, social equity and environmental protection – i.e. making sure that sustainable development takes place in the context of 'living today with tomorrow in mind'

3 Methodology

To compile this plan a Status Quo Investigation and Gap Analysis were conducted.

The following methodology was followed for the status quo investigation:

- All relevant records were obtained for the purposes of the study
- Relevant officials from the Municipality were interviewed
- Areas in the study were visited to obtain first-hand information of the existing status of the waste management services rendered
- Organisations involved in solid waste management were interviewed

The municipal area was assessed with consideration of waste generation, collection volumes, existing collection systems, equipment, personnel and landfill status. The status quo was completed based on the assessment findings.

The current waste management practices were evaluated against the principles contained in the waste management hierarchy and waste management aspects were evaluated from the points of generation through to disposal/landfill.

The status quo report compiled for the IWMP provided an indication of the planning context within which the greater IWMP for the SBM was formulated, as well as additional legislative frameworks that needed to be considered when undertaking the compilation of an IWMP. It set the platform for the completion of all subsequent stages of the integrated waste management planning for the SBM.

The following assumptions were made where insufficient information was available:

- Waste Generation Calculations:
 - Domestic Waste Generation – 7 days a week
 - Business Waste Generation – 6 days a week
- Waste Collection Calculations:
 - Domestic and Business – 5 days a week
- Where recorded generation rates were not available the following quantities were used:
 - Rural settlements (poor communities) – 0.3 kg/person/day
 - Urban – 0.8 kg/person/day

The status quo report provides legislative frameworks that was considered when reviewing the IWMP as well as an indication of the context within which the review of the IWMP was conducted.

3.1 Waste management needs

Based on the information collected, the needs of the Municipality for the immediate future were identified and measured against the existing IDP objectives, Western Cape IWMP and Spatial Development Framework (SDF) strategies.

3.2 Geographical area

The Saldanha Bay Municipality is situated 140 km north of Cape Town, it covers an area of 2 045km² with a 238 km coastline. The municipality is bordered by the Atlantic ocean in the west; the Berg River Municipality in the north and the Swartland Municipality in the east. It forms part of the West Coast

District Municipality. The SBM has 14 wards covering St Helena Bay; Jacobsbaai; Langebaan, Hopefield, Paternoster; Saldanha Bay and Vredenburg.

4 Policy and Legislation

This section addresses any policy and/or legislation that must be considered when compiling the 3rd generation IWMP.

South Africa has extensive legislation that has been promulgated to ensure protection of the environment and people. Relevant acts, regulations, guidelines and international conventions are discussed below.

The Constitution of the Republic of South Africa, 1996, as amended

The South African Constitution (Act 108 of 1996) is the supreme law of the land. Section 24 (a) of the Act states that: “everyone has the right to an environment that is not harmful to their health or wellbeing.” This poses a duty on all organs of state to promulgate legislation and to implement policies that ensure that this right is upheld. Chapter 7 of the Constitution states that the roles and responsibilities of local government include:

- Promotion of social and economic development; and
- Promotion of a safe and healthy environment.

The Municipality is responsible for waste removal, managing waste disposal facilities and cleansing as it sees it as a part of basic service and as per Schedules 4 and 5 of the constitution.

National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended

The National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended (NEMA) was promulgated in November 1998. It is the key legislation for environmental management in South Africa. NEMA promotes social, economic and environmental sustainability with a key focus on conservation of the environment. The Act requires environmental processes to be transparent and to provide capacity for disadvantaged stakeholders to participate. NEMA promotes the need for co-operative governance where more than one government department may be involved in decision-making for a proposed development.

NEMA was amended in 2006 and again in June 2010, providing a new list of activities that require environmental authorisation through different processes. The list describes those activities that require a basic environmental assessment (BA) and those that require a full environmental impact assessment (EIA). Both the BA and EIA involve public participation. The two processes are detailed and involved, however the EIA involves a longer timeframe, being broken down into scoping and impact assessment phases in comparison to BA:

- Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
- Development must be socially, environmentally and economically sustainable. The Act further defines in considerable detail the approach to sustainable development.
- Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated.
- Environmental justice must be pursued so that adverse environmental impacts are not in any way discriminatory to any part of the population.
- There must be equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being.
- The participation of all interested and affected parties in environmental governance must be promoted throughout the life cycle of any project or programme and any decision making process.

- Community well-being and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and the recognition of all forms of knowledge, including traditional and ordinary knowledge.
- The social, economic and environmental impacts must be considered, assessed and evaluated.
- Processes must be transparent.
- The rights of workers must be projected and the vital role of women and youth in environmental management and development must be recognised and their full participation promoted.
- There must be harmonisation between policies, legislation and actions relating to the environment. Global and international responsibilities relating to the environment must be incorporated at national interest.

National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), as amended

Chapter 1, Section 2 of the National Environmental Management Waste Act provides the following objectives of the act:

- To protect health, well-being and the environment by providing reasonable measures
- Minimising the consumption of natural resources;
 - Avoiding and minimising the generation of waste;
 - Reducing, re-using, recycling and recovering waste;
 - Treating and safely disposing waste as a last resort;
 - Preventing pollution and ecological degradation;
 - Securing ecologically sustainable development while promoting justifiable economic and social development;
 - Promoting and ensuring the effective delivery of waste services;
 - Remediating land where contamination presents, or may present a significant risk or harm to human health or the environment; and
 - Achieving integrated waste management and reporting and planning.
- To ensure that people are aware of the impact of waste on their health, well-being and the environment;
- To provide for compliance; and
- To give effect to section 24 of the Constitution in order to secure an environment that is not harmful to health and well-being.

The Act requires that a National Waste Management Strategy (NWMS) be drafted in order to achieve the objectives of the Act. The NWMS was drafted and finalised in 2011 and all spheres of government must implement this strategy. It also sets waste service standards, covering areas such as tariffs, quality of service and financial reporting. Municipalities are also required by the Act to designate a waste management officer.

According to the Act, each municipality must produce an IWMP and submit it to the Member of the Executive Council (MEC) for approval. The approved IWMP must be included in the Municipal IDP. Prior to finalising the IWMP, the Municipality is required to follow the consultative process as defined in Section 29 of the Municipal Systems Act. This can be done either as a separate process or as part of the consultative process relating to its IDP.

Minimum contents required in an IWMP are outlined in the National Environmental Management: Waste Management Act. The contents of this IWMP were guided by those for a standard IWMP.

The NEMWA provides definitions of waste as well as the listed activities that require licensing. This Act also provides specific waste management measures for remediation of contaminated land as well as for compliance and enforcement. Waste and waste management activity as amended by Act 14 of 2003 is defined as follows:

“Waste” means:

- a) Any substance, material, or object that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and that includes all wastes as defined in Schedule 3 of the Act; or
- b) Any other substance, material, or object that is not included in Schedule 3 that may be defined as waste by the Minister by notice in the Gazette,
- c) Once an application for its re-use, recycling or recovery has been approved or, after such approval, once it is, or has been re-used, recycled or recovered;
- d) Where approval is not required, once a waste is, or has been re-used, recycled or recovered;
- e) Where the Minister has, in terms of section 74, exempted any waste or a portion of waste generated by a particular process from the definition of waste; or
- f) Where the Minister has, in the prescribed manner, excluded any waste stream or a portion of a waste stream from the definition of waste.”

“Waste management activity” means any activity listed in Schedule 1 or published by notice in the Gazette under section 19, and includes:

The generation of waste, including the undertaking of any activity or process that is likely to result in the generation of waste;

- a) The accumulation and storage of waste;
- b) The collection and handling of waste;
- c) The reduction, re-use, re-cycling and recovery of waste;
- d) The trading in waste;
- e) The transportation of waste;
- f) The transfer of waste;
- g) The treatment of waste; and
- h) The disposal of waste.

Guideline for the development of Integrated Waste Management Plans (IWMPs)

The IWMP guidelines provide a background for the compilation of IWMPs which includes a short historical overview of IWMPs to date and a basic description of the legal framework pertaining to IWMP development.

The integrated waste management planning process incorporates all major stages of the environmental planning process, namely:

- Analysing the current situation and legal framework;
- Making projections of future requirements;
- Setting objectives;
- Developing projects and programmes to reach the set objectives;
- Implementation of plan (activities, projects and programmes);

- Monitoring and Evaluation (M & E) of the programmes and plans implemented; and
- Periodic review of the plans to ensure continuous improvement.

National Waste Management Strategy (2011), November 2011

The National Waste Management Strategy (2011) (NWMS) was promulgated on 4 May 2012 to address South Africa's waste management challenges, and gave effect to the suite of policies and relevant legislation which preceded it. The overall objective of the strategy is to reduce the generation of waste and reduce the impact of all forms of waste on economic development, health and the quality of environmental resources. The NWMS sought to achieve the following goals:

- Promote waste minimisation, re-use, recycling and recovery;
- Ensure effective and efficient waste delivery services;
- Growing the contribution of the waste sector to the green economy;
- Ensure that people are aware of the impact of waste on their health, well-being and the environment;
- Achieve integrated waste management planning;
- Ensure sound budgeting and financial management for waste services;
- Provide measures to remediate contaminated land; and
- Effective compliance with and enforcement of the Waste Act.

National Norms and Standards for Assessment of Waste for Landfill Disposal, Government Notice No. 635 of 23 August 2013

The National Norms and Standards for the assessment of waste for landfill disposal prescribe the requirements for the assessment of waste prior to landfill.

National Norms and Standards for disposal of Waste to Landfill, Government Notice No. R. 636 of 23 August 2013

The norms and standards for disposal of waste to landfill stipulate the waste acceptance criteria for disposal to landfill and the various waste disposal restrictions.

Waste Classification and Management Regulations, Government Notice No. 634 of 23 August 2013

These regulations regulate classification and management of waste to give effect to provisions of the NEMA.

National Norms and standards for the Storage of Waste, Government Notice No. 926 of 29 November 2013

The purpose of the norms and standards is to-

- a) Provide a uniform national approach relating to the management of waste storage facilities;
- b) Ensure best practice in the management of waste storage facilities; and
- c) Provide minimum standards for the design and operation of new and existing waste storage facilities.

Municipal By-Laws, published in Provincial Gazette Extraordinary, 24 December 2012.

Municipalities are required to draft and maintain municipal by-laws which detail the responsibilities of the municipalities and the residents within a defined municipal boundary. In terms of Chapter 7 on Local Government, section 162 on the publication of by-laws of the Constitution of the Republic of South Africa:

- A municipal by-law may be enforced only after it has been published in the official gazette of the relevant province.
- A provincial official gazette must publish a municipal by-law upon request by the Municipality.
- Municipal by-laws must be accessible to the public.

SBM has a Solid Waste Disposal by-law that was published December 2012.

The Department of Environmental Affairs and Development Planning (DEA&DP) is in the process of drafting a model Integrated Waste Management By-law which can be used to review existing by-laws.

Polokwane Waste Summit Declaration (September 2001)

During September 2001 a national waste summit was held at Polokwane. It was attended by all stakeholder groupings in the waste field in order to jointly chart a way forward in terms of waste management. The resultant Polokwane Declaration includes a vision and goal for the management of all waste, i.e. domestic, commercial and industrial:

- Vision - To implement a waste management system, this contributes to sustainable development and a measurable improvement in the quality of life by harnessing the energy and commitment of all South Africans for the effective reduction of waste.
- Goals - To reduce waste generation and disposal by 50% and 25% respectively by 2012 and develop a plan for zero waste by 2022. The Polokwane Declaration has significant implications for local government. In order to move towards the goal it will be necessary for government and other stakeholders to engage more closely toward the achievement of this goal in a realistic and practical manner.

The key actions in the Polokwane Declaration that impact on local government include the following:

- Implement the NWMS (2011).
- Develop and implement legislative and regulatory framework.
- Waste reduction and recycling.
- Develop waste information and monitoring systems

International Conventions

South Africa is a signatory to the Basel (1994) and Stockholm (2001) Conventions. The key objectives of the Basel Convention are:

- To minimise the generation of hazardous waste in terms of quantity the severity of the hazard;
- To dispose of them as close to the source of generation as possible;
- To reduce the movement of hazardous waste.

A central goal of the Basel Convention acceded to by South Africa in 1994, is “environmentally sound management” (ESM), the aim of which is to protect human health and the environment by minimising hazardous waste production whenever possible. ESM means addressing the issue through an “integrated life-cycle approach”, which involves strong controls from the generation of a hazardous waste to its storage, transport, treatment, reuse, recycling, recovery and final disposal.

The Stockholm Convention on Persistent Organic Pollutants (POPs), to which South Africa became a signatory in 2001. It is a global treaty to protect human health and the environment from POPs. POPs are particularly carcinogenic and are toxic to both humans and wildlife. Burning of waste in open landfill sites or by incineration has the potential to produce high volumes of POPs into the atmosphere.

The National Health Act, 2003 (Act No. 61 of 2003)

The National Health Act, 2003 defines “municipal health services” to include water quality monitoring; food control; waste management; health surveillance and prevention of communicable diseases, excluding immunisations; vector control; environmental pollution control; disposal of the dead; and chemical safety, but excludes port health, malaria control and control of hazardous substances.

Section 32 of the Act requires that municipal health services (including waste management) be effectively and equitably provided. Furthermore, national and provincial government must enter into a service level agreement as contemplated in section 156(4) of the Constitution, assigning the administration of the listed matters to the municipality.

The service level agreement must according to section 32(3) provide for:

- a) The services to be rendered by the municipality;
- b) The resources that the relevant member of the executive council must make available;
- c) Performance standards which must be used to monitor services rendered by the municipality; and
- d) Conditions under which the agreement may be terminated.

This Act also pertains to health care waste management. The Act, in relation to waste activities designates the municipal services by including waste management in terms of formulating regulations regarding medical and health care waste by the Minister Responsible.

Municipal Structures Act, 1998 (Act No 117 of 1998)

The Municipal Structures Act, 1998 (Act 117 of 1998) delineates powers and functions of different categories of municipalities. In terms of the Act, municipalities have powers and functions relating to integrated, sustainable and equitable social and economic development of the district. This role should be performed by ensuring integrated development planning for the district as a whole, building the capacity of local municipalities to perform their functions, exercising local municipal powers where capacity is lacking, and promoting the equitable distribution of resources between the local municipalities in its area. The Act further reiterates the functions of local municipalities as contained in the Constitution excluding the ones referred to as district functions. This includes the provision of waste collection and disposal services and cleansing.

Municipal Systems Act, 2000 (Act No. 32 of 2000)

The Municipal Systems Act, 2000 (Act 32 of 2000) defines alternative approaches that may be employed in delivering municipal services and the processes to be followed when such alternatives are considered. The need for integrated planning and performance monitoring of both external and internal mechanisms of service delivery are emphasised in the Systems Act. The Act further mandates communities to be encouraged to participate in strategic decisions making relating to service delivery.

Waste Tyre Regulations, Government Notice No.149, 3 February 2009

The Waste Tyre Regulations are designed based on Section 24C of Environmental Conservation Act (ECA) 1989, (Act No. 73 of 1989). This design is intended to regulate the handling, storage and disposal of used tyres.

Minimum Requirements for Waste Disposal by Landfill, 1998

The then Department of Water Affairs and Forestry (DWAF), having a concern for the protection of water resources of South Africa and at the time being responsible for permitting of waste facilities developed a part series of documents commonly referred to as the ‘Minimum Requirements’. The first edition was published in 1994, followed by the 2nd edition, which superseded the 1st edition in 1998. The general objectives of the Minimum Requirements are to:

- Set out minimum requirements in terms of processes to be followed and information required for the application of a permit for a facility;
- Provide a minimum set of environmentally acceptable ways of handling, transportation, treatment and disposing of different types of waste that has to be achieved; and
- Set minimum standards and specification, which had to be adhered to, in order to protect water resources from potential pollution from waste facilities.

5 Situation analysis

To determine the status quo of waste management services in the SBM a situation analysis was conducted. The situation analysis was conducted to evaluate and quantify all waste management aspects within the city council. This includes the current status of the number of residents in the city council; the demographic profile; socio-economic composition and delivery of waste management services in the area.

This IWMP is a review and update of the previous IWMP that was produced in September 2011. It seeks to ensure that the 2011 IWMP was implemented successfully and to set the path for the next 5 years. The IWMP will be updated to ensure that measures are put in place to minimise waste generated and disposed according to the waste management hierarchy.

5.1 Geographic Profile

Saldanha Bay Municipality (WC014) is a local municipality located on the West Coast of South Africa, approximately 140 kilometers north of Cape Town. It forms part of the West Coast District Municipality (DC1), situated in the Western Cape Province. The Swartland Municipality borders the municipality in the west by the Atlantic Ocean, in the north by the Bergrivier Municipality and the east.

The Saldanha Bay Municipality covers an area of 2 015 km² (approximately 166 565,48 hectares) and has a coastline of 238km. In total 0.4% of the geographical land are urban land and 96.96% rural land. Overall Saldanha Bay municipality constitutes 5.8% of the entire West Coast geographical land making it the smallest municipal area in the district. The head office is located in Vredenburg, with satellite offices in Hopefield, St Helena Bay, Paternoster, Saldanha and Langebaan. Saldanha Bay has the largest natural port in Africa and the area is earmarked as a regional engine for the development of the Western Cape Province.

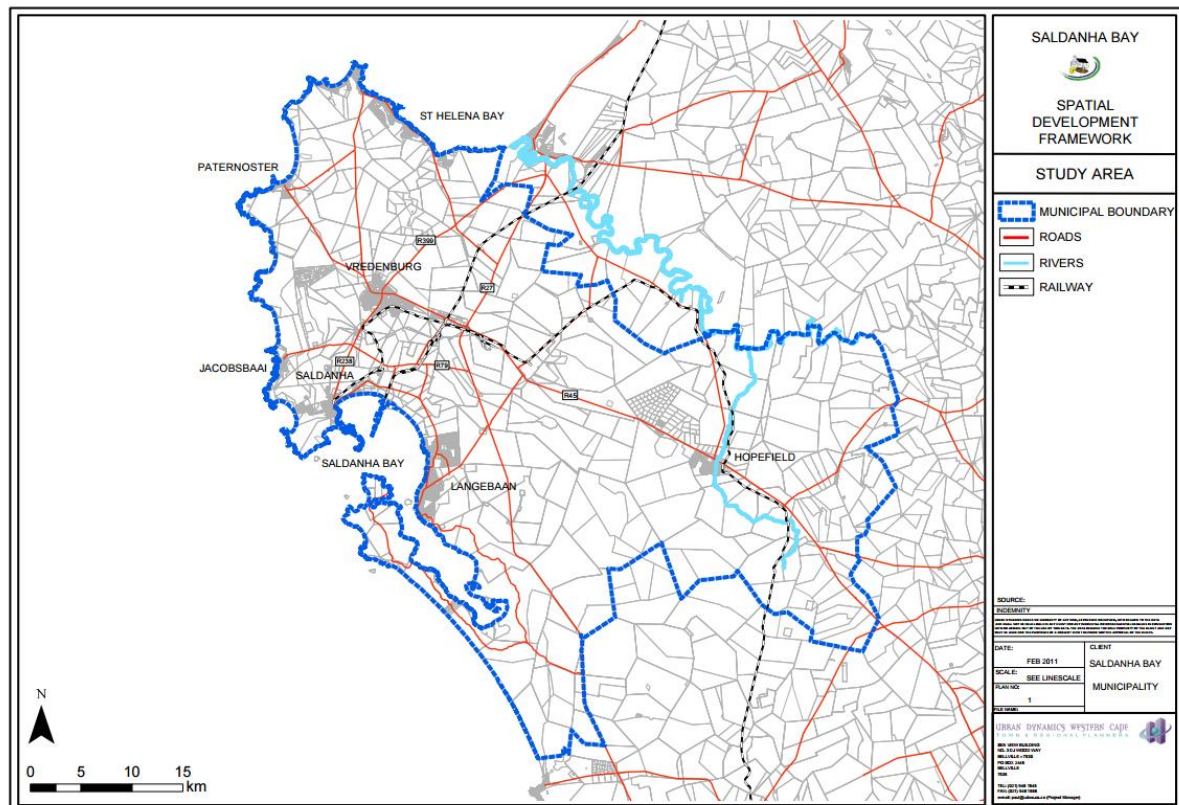


Figure 1: Saldanha Bay Spatial Development Framework¹

5.1.1 Geology

A large portion of SBM is covered by unconsolidated to semi unconsolidated Cenozoic-age deposits. In terms of the hard-rock units, the Malmesbury group and granites of the Cape Granite Suite make up the outcrop area. The Malmesbury group makes represents the oldest rocks in the study area and has been intruded by a number of plutons of the Cape Granite Suite. These form areas of moderate to high relief above the coastal plain, e.g. the Patrysberg and Katzenberg near Vredenburg as well as Olifantskop near Langebaan.

The SBM occurs within the so-called 'Saldania Belt' and is composed of a number of Malmesbury basement inliers which are exposed in mega-anti-clinical hinges of the Permo-Triassic Cape Fold Belt. The three Malmesbury terranes display different tectonic terranes display different tectonic styles and degrees of deformation, namely (Visser, 1998):

- The Tygerberg terrane displays light, upright, northwest striking folds with narrow hinge zones.
- The southern and western areas in the Swartland terrane contain upright folds slightly inclined to the south west. A second phase of north-east string open cross-folds occurs commonly. In the northeast portion the lower stratigraphic units are exposed north westerly elongated domal structure called the Swartland Dome. A third phase of deformation displays different orientation and intensities of deformation, mostly evidenced by northwest or southeast plunging folds.
- Swartland Terrane shows a single phase of near upright fold with an almost vertical axial planar cleavage.

¹ Saldanha Bay Municipality Spatial Development Framework, February 2011

5.1.2 Geohydrology

The Langebaan Road and Elandsfontein aquifer systems are present in SBM.

The Langebaan aquifer comprises a multi layered aquifer wherein at least two layers have been identified, namely the so-called unconfined Upper- and confined Lower aquifer units. The Elandsfontein clayey aquitard separates the two aquifer units but is not always present and in such cases no distinction can be made between the two units. It is also likely that some degree of hydraulic connection exists between the Upper and Lower Aquifer units where the aquitard thickness is less than 10m (SRK, 2003).

The Elandsfontein Aquifer system is comprised of a basal confined aquifer formed by sand and gravel of the Elandsfontein formation, located below a thick sequence of clay and peat.

Any aquifers developed in the Malmesbury group rocks are of a secondary type. Aquifers developed in tertiary to quaternary age unconsolidated sediments are of the intergranular or primary type. Groundwater can occur in weathered rock and jointed bedrock in Cape Granite Suite, i.e. fractured and intergranular type aquifers.

5.2 Demographics (Population and Development Profiles)

The census 2011 data, the SBM 2015/16 IDP were used to complete demographic details.

The Municipality is currently structured into the following 14 Wards: The recent demarcation published indicated a fourteenth ward to be incorporated into the municipal planning and budgeting alignments.

Table 1: Municipal wards

WARD	AREAS
1	Middelpos & Diazville West
2	RDP Area
3	White City
4	Diazville / RDP Area
5	Saldanha Town, Blue water Bay & Jacobs Bay
6	Langebaan South
7	Hopefield & Koperfontein
8	Vredenburg North, Langebaan Air Force Base & Green Village
9	Ongegund, George Kerrige & Smarty Town
10	Vredenburg South & Louwville North
11	St. Helena Bay & Paternoster
12	Laingville

WARD	AREAS
13	YSKOR & Part of Louwville
14	Langebaan North

The SBM consists of big rural areas, as well as the following towns:

5.2.1 St Helena Bay

St. Helena Bay is one of the world's principal fishing centres. The cold Benguela current surges upwards along this part of the coast and bring to the surface large concentrations of nutrient salt. Huge shoals of anchovies and pilchards (before they were depleted by over fishing) fed in the area on the plankton that flourished on the nutrient salts. Twelve busy fish-processing factories were established along the 21km curve of the shore from West Point to Sandy Point and Stompneus.

5.2.2 Jacobsbaai

Jacobsbaai is an isolated bay a few kilometres north of Saldanha Bay with a sea frontage of about 2km. Its interesting coastline has peninsulas, rocky and sandy bays with cosy beaches and an abundance of seafood, crayfish, fish, mussels and abalone.

5.2.3 Paternoster

Life in Paternoster is still very much associated with the sea and fishing industry (Paternoster Fisheries).

5.2.4 Cape Columbine Nature Reserve (Tietiesbaai)

The reserve covers an area of 263 ha along the rocky stretch of coastline with numerous inlets and coves. This area was declared a nature reserve in December 1973. The vegetation of typical West Coast field ranges from the well-known West Coast fynbos to Karoo succulent.

5.2.5 Saldanha

Saldanha has a huge iron ore quay and is home to a large variety of fishing vessels. Saldanha Bay is the largest natural bay in South Africa. Its sheltered harbor plays an important part in the huge Sishen-Saldanha iron ore project at which Saldanha Steel, a state of the art steel mill, takes centre stage. The town is not only important for export but also hosts many other industries, for example, crayfish, fish, mussels, oysters, seaweed and many more. Saldanha is also the location of the South African Military Academy as well as SAS SALDANHA, a naval training unit.

5.2.6 Hopefield

The town, 120km from Cape Town, is situated on the R45 and can be reached by either the West Coast R27 or N7 highways. Hopefield serves the grain, dairy, meat, honey and "waterblommetjie" farmers of the area.

5.2.7 Vredenburg

Numerous businesses line the main road of Vredenburg, the largest administrative and commercial centre on the West Coast.

5.2.8 Langebaan

Just over one hundred kilometres from Cape Town, next to the scenic Langebaan Lagoon, nestles the one of the oldest tourist destinations on the West Coast of South Africa.

In a comparative growth potential study of settlements within the Western Cape conducted by the Department Environmental Affairs and Development Planning during 2010, settlements within the municipal boundaries of SBM were classified as follow:

Table 2: Development potential versus social needs

Level	Very High Development Potential (leader settlement)	High Development Potential (Aspirant leader settlement)
Medium Social Needs	Vredenburg	Hopefield Saldanha
Low Social Needs	Not applicable	Paternoster St Helena Bay
Very Low Social Needs	Not applicable	Langebaan

5.2.9 Population

The SBM is the largest (in population size) municipality in the West Coast District Municipality (WCDM). It has a total population of 111 173 (50% male and 50% female) with 35 550 households (2016 Community Census) and 1 116 agricultural households (Census, 2011). 96.8% of dwellings are in the urban area with the remaining 3.2% dwellings on farms. SBM's population grew from 99 193 in 2011 to 111 173 in 2016 according to the 2016 Community Census. The council is ranked 113 in South Africa by population size (Stassa; 2011).

Table 3 shows population demographics for the Saldanha Bay Municipality compared with WCDM and the Western Cape Province.

Table 3: Population Demographics for SBM, WCDM and the Western Cape Province

	Saldanha Bay	West Coast District Municipality	Western Cape Province
Surface area km ²	2 015	31 100	129 462
Population size ²	111 173	436 403	6 279 730
Households ³	35 550	128 862	1 933 876

5.2.10 Age and Gender Profile

The SBM has a very young population, with 61.7% of the population under the age of 35, see Table 4, with the largest number of people between the ages 20-29. The population is comprised of 50.2% females and 49.8% males.

² 2016 Community Census, StatsSA

³ 2016 Community Census, StatsSA

Table 4: Age and gender profile of SBM



5.2.11 Households

The municipality consists of 35 550 households (including agricultural households). Census 2011 indicated that 96.8% and 3.2% households are in urban area and on farm land respectively. The household profile is used to measure the average household size of 3.1. This information is important because the number and size of households will assist the city council with proper planning for waste collection and management. Smaller household sizes are often attributed to more affluent areas. However, this statement does not take into account culture and preferences and therefore cannot be used as an only determinant of waste volumes according to area.

5.2.12 Employment

Knowing the employment rate within a municipality is vital for integrated waste management planning because the municipality can use employment figures to predict the volumes of waste produced and therefore make adequate provision of resources to render the required waste management services.

StatsSA estimates that SBM had 34359 employed persons in 2011 and 10470 unemployed. SBM has an employment percentage of 70% and unemployment rate of 21%. 4% of the SBM population are discouraged work seekers. 30.4% of the unemployment rate is youth. Only 70% of the population was employed at the time of the survey. Figure 2 and Figure 3 shows the employment status the SBM population. Youths and discouraged work seekers can be trained and appointed in areas where the need for human resources are critical.

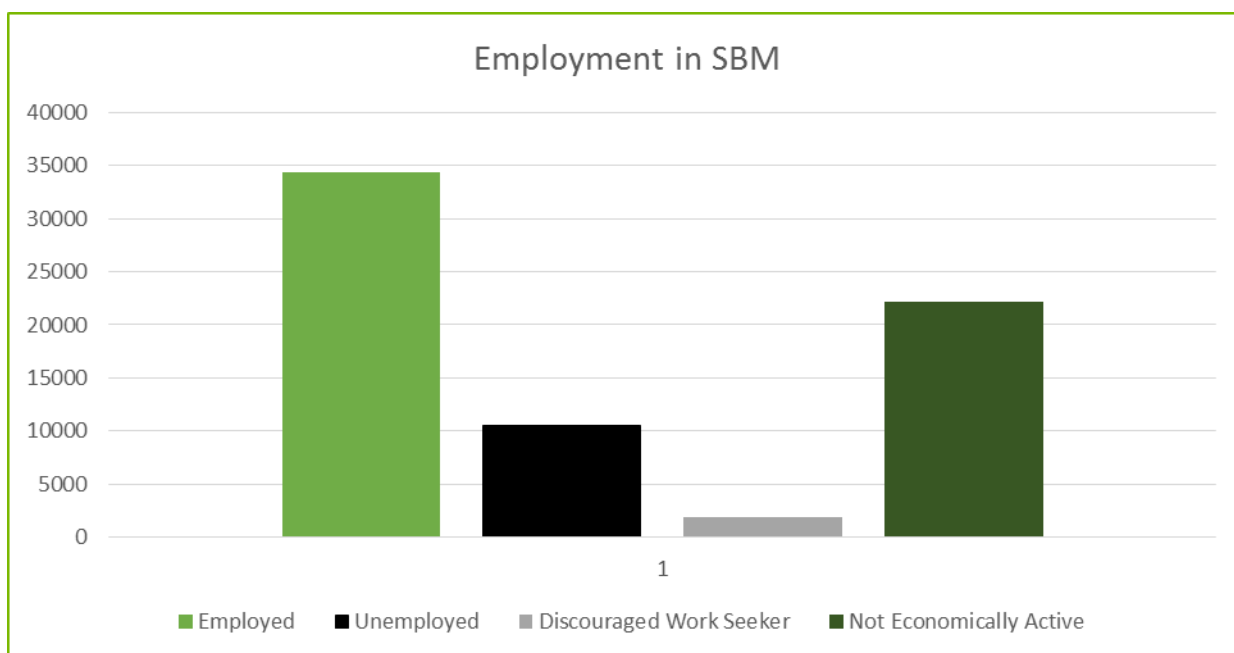


Figure 2: Number of employed and unemployed people in SBM

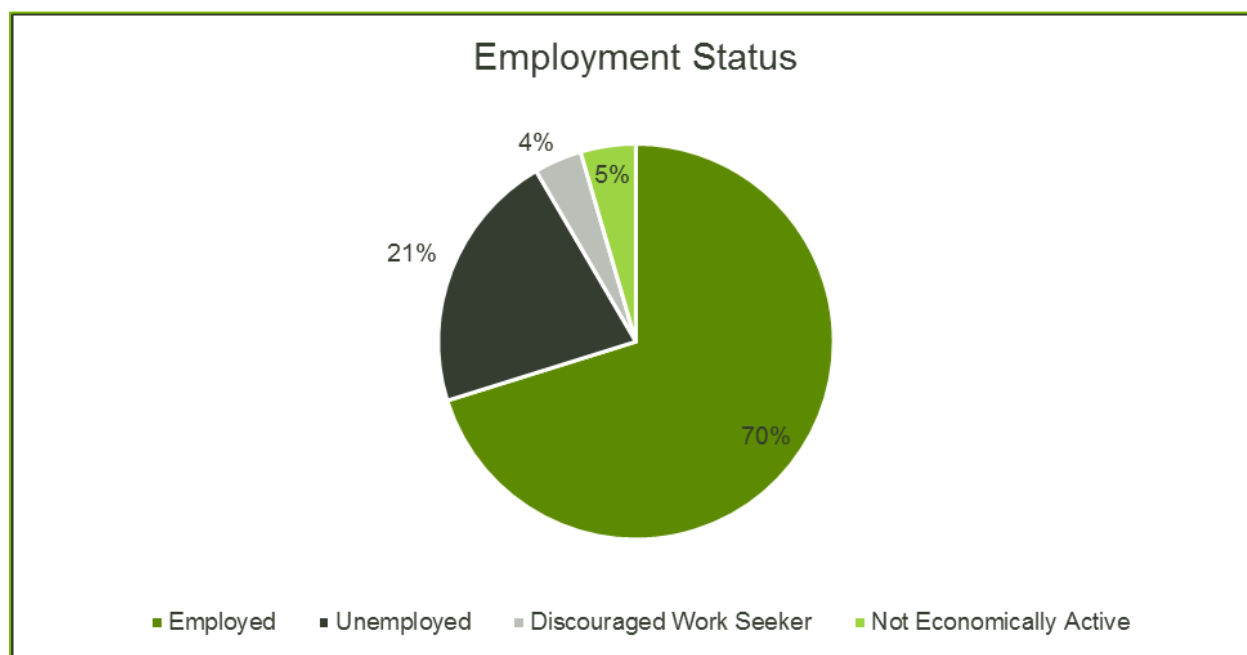


Figure 3: Employment status

A large amount of waste is also being generated by informal trading and this is not reflected in the employment figures below due to the unavailability of data.

5.2.13 Annual Household Income

Household income is a vital determinant of welfare and the standard of living. Household income is a family's ability to meet their basic needs in the acquisition of food, shelter and clothing. One of the most important poverty indicators is the Minimum Living Level (MLL). The Minimum Living Level indicates the minimum financial requirements of a family if they are to maintain their health and have acceptable standards of hygiene and sufficiently meet their needs.

13.9% of the population have no income; 49 % earn an average of less than R77 000 per year and only 8% earning more than R307 000 on average per year (see Figure 4).

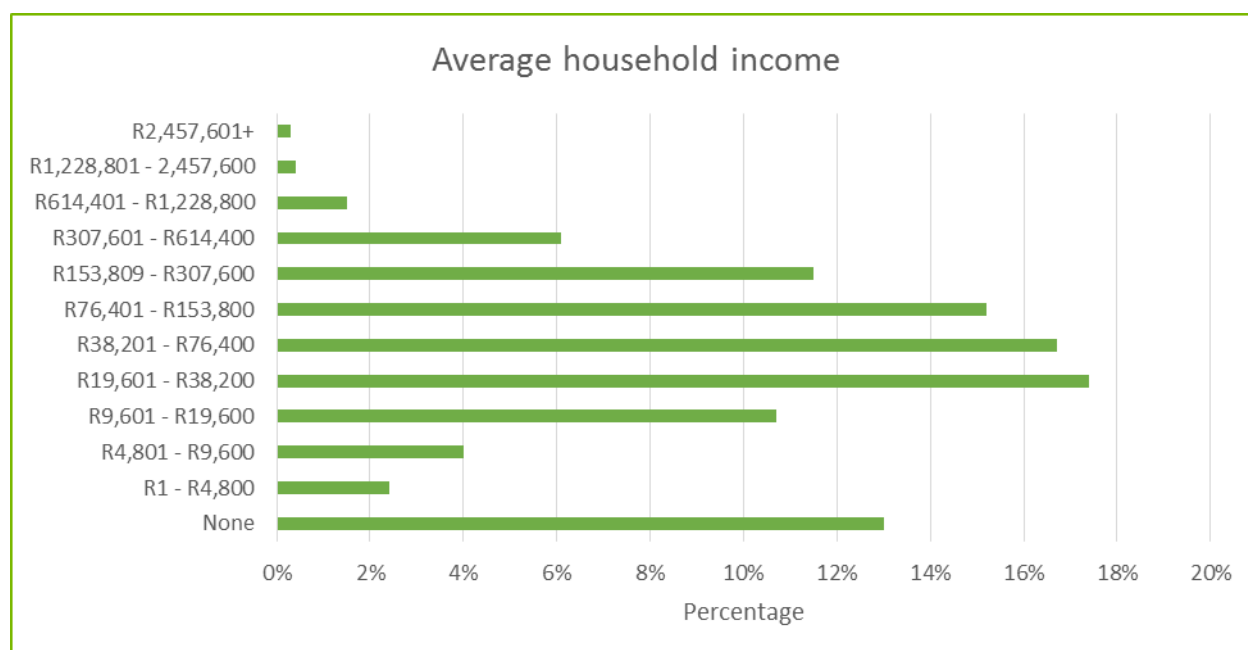


Figure 4: Average household income

Generally, waste generation tends to increase with household income; however there is no direct correlation between waste generation and household income and many variances occur. Therefore, it is difficult to predict the impact that income has on waste generation rate. But, it is acceptable to assume that a huge economic growth could be accompanied by growth in waste generated before possible waste minimisation strategies take effect.

5.2.14 Economy

The SBM economy is based on the manufacturing; agricultural/fishing; tourism and harbour industries. The industrial tourism and agricultural sectors are viewed as the primary economic drivers. However mechanisation in the agricultural sector have led to farm workers losing their jobs and leaving the area to seek employment elsewhere.

The Saldanha Port is strategically located to contribute to the economic growth of the municipality. Its links to road, rail and air transportation modes makes it easier to transport products.

5.3 Determining current waste generation and estimating future waste generation rates and quantities

It is important to determine the current waste generation rates and type of waste generated in order to ensure that there are adequate resources for collection of waste and adequate facilities to properly handle and manage the amount of waste generated with the intention of minimising the amount of solid waste disposed at waste disposal facilities. Estimating future generation rates and quantities will assist with planning to ensure that there will be adequate resources to meet future waste services demands.

5.3.1 Service level standards

Table 5 below indicates the level of waste services being rendered in SBM.

Table 6: SBM Schedule of service delivery standards⁴

Standard	Service level
Premise based removal (Residential Frequency)	Weekly
Premise based removal (Business Frequency)	From 1 to 3 removals per week, depending on client needs, and type of waste generated
Bulk Removal (Frequency)	weekly
Removal Bags provided(Yes/No)	240 Litre wheelie bins provided
Garden refuse removal Included (Yes/No)	Garden waste can also be placed in wheelie bin
Street Cleaning Frequency in CBD	Daily
Street Cleaning Frequency in areas excluding CBD	Monthly
How soon are public areas cleaned after events (24hours/48hours/longer)	48 hours, 2 work days
Clearing of illegal dumping (24hours/48hours/longer)	Illegal dumping is cleaned as per a fixed program, if illegally dumped waste pose a serious health threat, it will be cleaned within 48 hours
Recycling or environmentally friendly practices(Yes/No)	Yes
Licenced landfill site(Yes/No)	Yes

5.3.2 Households

A majority of household in SBM are in the urban area with very few households on tribal/traditional land and farms. More than 70% of households in the municipality are small in size (4 occupants and less). Households are issued with wheelie bins. Waste separation is not carried out at household level. An initiative for separation at source is however implemented as a phase 1 in Langebaan during October 2016. Separation at source initiatives will be implemented as a phase 2 in Vredenburg, Hopefield, Jacobs Bay and Paternoster during August 2017 and phase 3 in St Helena Bay and Saldanha during February 2018. 100% of households in SBM received basic waste collection services which entails kerbside collection once a week⁵. Provision is made on the budget to cover cost for free basic services rendered.

5.3.3 Businesses

Business areas have a different waste generation profile. They are significant waste generators but with a higher percentage of packaging material in the waste. The composition of business waste can vary significantly between different types of businesses. Business waste in general has a higher potential for recycling due to the fact that waste materials are more homogeneous or exist in higher concentrations within the waste stream, as compared to what can be found in household. Most businesses generate what is classified as a general waste originating from offices, common areas and lounges and service areas. If this waste is properly managed by being separated at source,

⁴ SBM Budget 2016/17

⁵Saldanha Bay Municipality, IDP 2012 – 2017, Revision2

businesses can contribute to a sustainable solution for waste management. Businesses in SBM can dispose their waste in wheelie bins provided by the council.

Waste from the informal business sector is often problematic. Particularly where trading is concentrated, littering and illegal dumping often occurs.

5.3.4 Farming

Farms including aquaculture generate a variety of waste including hazardous waste through using fertilisers and pesticides. A large portion of waste from farms is organic. Resident farm workers have a waste generation profile similar to that of rural areas, however this might not be covered by municipal administration because it exists on private land. Waste from farms in any municipality is relatively small compared to other sectors. Waste from farms makes up 6.1% of total waste produced in South Africa (Enviropaedia, 2007).

Waste from farms is not included in the round collection services. Farmers can take their general waste directly to the Vredenburg waste disposal facility and garden waste to the Langebaan waste disposal facility.

5.3.5 Healthcare Facilities

Clinics and healthcare workers have the potential to generate Health Care Risk Waste (HCRW), which is hazardous and therefore must be treated appropriately. A lack of appropriate HCRW treatment facilities presents a critical pollution risk at the point of generation. All public clinics and hospitals are under the authority of the Provincial Department of Health. Environmental Health Practitioners are responsible for control of waste under the supervision of the Chief Environmental Health Practitioner.

According to the United Nations (UN) Regulations of dangerous goods and the South African National Standards (SANS) 10248, hazardous waste is divided in 9 different classes. Hazardous Health care Waste which can be found in every healthcare facility is classified as class 6 waste (toxic and infectious); sub division 6.2: infectious substances. Additionally, SANS 10248 classifies waste streams within healthcare facilities in different hazardous ratings (HR 1-4) and in different waste streams. These streams are supposed to be packed, labelled, handled, stored and treated according to their level of hazard in order to create a safe and environmentally sound healthcare waste management:

- Human or anatomical waste
- Infectious human anatomical waste (colour code RED – labelling Class 6.2)
- Infectious animal anatomical waste (colour code ORANGE – labelling Class 6.2)
- Non-infectious animal anatomical waste (colour code BLUE)
- Infectious non-anatomical waste (colour code RED – labelling Class 6.2)
- Sharps (colour code YELLOW – labelling Class 6.2)
- Pharmaceutical or chemical waste (colour code GREEN – labelling different Hazardous Classes)
- Cytotoxic pharmaceutical waste (colour code GREEN – labelling specific sign: red triangle on black background with bold letters: Cytotoxic)
- Radioactive waste (labelling Class 7: radioactive Material)
- General Healthcare waste (colour code BLACK)

- According to the World Health Organisation (WHO6) 20% of healthcare waste is hazardous; it is made up of:
 - Infectious and anatomic waste (15%)
 - Sharps (1%)
 - Chemical or pharmaceutical waste (3%); and
 - Genotoxic waste, radioactive matter and heavy metal content (1%).

Sharp waste, although produced in small quantities is highly infectious if it is poorly managed. Contaminated needles and syringes represent a particular threat and may be scavenged from waste areas and dump sites and re-used. There is no information on the general relation of these fractions in the waste stream of hospitals and clinics. General waste can be found in the HCRW stream as a result of poor segregation at source. Only general waste from the hospitals and clinics is collected by the waste management unit of SBM, HCRW collection is provided for at provincial level.

5.3.6 Waste generation rates

Statistics from the 2011 Census were used to estimate quantities of waste generated in SBM. Using typical waste generation figures, the total volume (in tonnes) of municipal waste was calculated. Allowance to include commercial, waste, builder's rubble and non-hazardous was made.

General waste is defined as waste that does not pose a significant threat to public health and the environment if properly managed. It includes:

- Metals
- Paper
- Glass
- Plastic
- Organic
- Inert and builder's rubble.

Recyclables like plastic, paper, glass and metal makes up a large percentage of waste produced in SBM (including households and businesses), see Figure 5 for total waste composition within the Municipality. Actual weighbridge data at Vredenburg waste disposal facility and IPWIS conversion factors at Langebaan waste disposal facility were used for this summary.

Table 7: Total waste generated in SBM

Waste generated per ton within SBM		
Waste Disposal Facility	Per year	Per Month
Vredenburg	66153	5513
Langebaan	19500	1625
Totals	85653	7138

⁶ Waste from health-care activities, Fact sheet No. 253, November 2011. Accessed from www.who.int/mediacentre/factsheets/fs253/en/, on 14 September 2015.

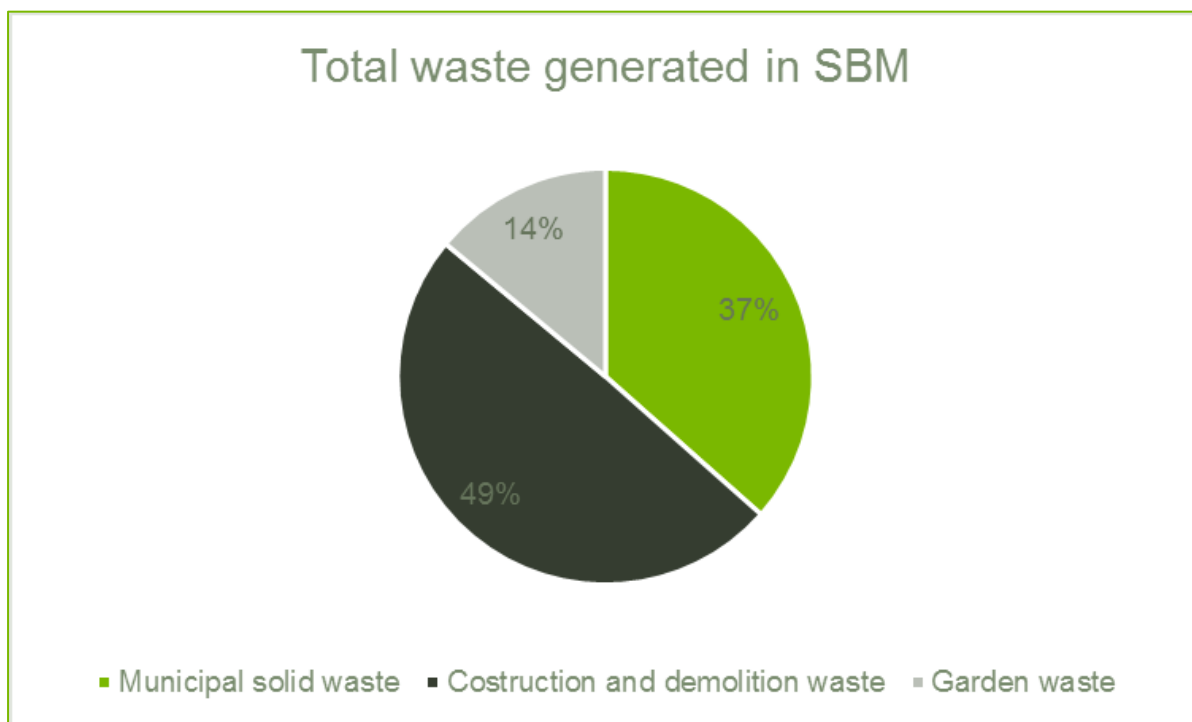


Figure 5: Current waste composition in SBM

The calculated waste generation rates using population and projected population growth is presented below.

Table 8 presents projected waste generation for the years 2015, 2021 and 2031 with different growth scenarios. Additional waste management infrastructure will be required for the development of the Industrial Development Zone (IDZ) and implementation of the West Coast Industrial Plan.

Table 8: Projected waste generation rate

Area	Population (2016 Community Census)	Growth Rate (%)	Projected Population Growth			Projected Waste Generation ton/year		
			2021	2026	2031	2021	2026	2031
SBM	111 173	3.00%	128880	149407	173204	115110	133445	154699
		4.00%	135336	156892	181881	125640.2	152861	185978
		6.00%	157701	211040	282419	140852.3	188492	252245

The Saldanha Bay Municipal area produces 1 111 tons of solid waste per week, which is from approximately 30 000 service points. The solid waste is transported to the Vredenburg waste disposal facility for disposal (Saldanha Bay IDP; 2012-2017).

5.4 Waste Quantities and Types

A waste characterization study was performed at the Vredenburg waste disposal facility during February and March 2016. See Figure 6 for the results determining the composition of waste disposed of at Vredenburg waste disposal facility excluding construction and demolition waste.

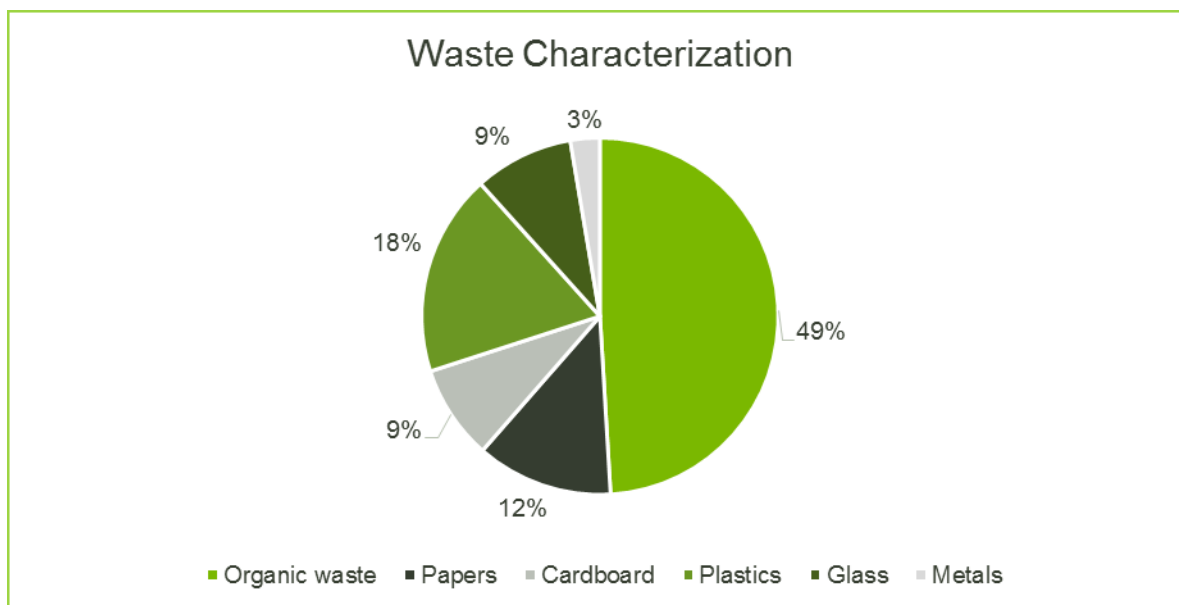


Figure 6: Vredenburg waste characterization study

5.5 Specific Waste Stream

5.5.1 Healthcare risk waste

Waste from healthcare facilities is classified in different hazardous ratings (HR 1-4) and in different waste streams. These streams are required to be packaged, labelled, handled, stored and treated according to their level of hazard in order to create a safe and environmentally sound healthcare waste management system. Hazardous healthcare waste which can be found in every healthcare facility is the infectious waste, including sharp waste. HCRW is generated at the clinics and hospitals in the municipal area.

5.5.2 Hazardous Waste

Hazardous waste can be defined as waste that may have a detrimental effect on public health and is categorised according to the degree at which it might cause harm. SABS CODE 0228 classifies hazardous waste as:

- Class 1 – explosives
- Class 2 – gases
- Class 3 – flammable liquids
- Class 4 – flammable solids
- Class 5 – oxidising substances and organic peroxides
- Class 6 – toxic and infectious substances
- Class 7 – radioactive substances
- Class 8 – corrosives
- Class 9 – other miscellaneous substances

Hazardous waste in the municipality can be produced mainly by industries, healthcare facilities and farming activities. The SBM does not currently have record of hazardous waste generated within its boundaries.

The guideline for the development of integrated waste management plans is based on the National Waste Management Strategy (2001) and indicates that a local municipal IWMP must only cover hazardous domestic waste in detail. Framework planning for hazardous industrial waste, agricultural and forestry waste (pesticides), medical waste, mining waste, power station waste, radioactive medical waste and radioactive mining waste will be done at provincial level. The National Waste Management Strategy (2011) requires provincial environmental departments to produce integrated hazardous waste management plans.

The closest licensed hazardous waste disposal facility is Vissershok, nearby Cape Town. Currently, industries in the municipal area that generating hazardous waste tend to appoint a hazardous waste contractor to manage their on-site waste facilities and/or to collect and dispose of this waste at the Vissershok site.

5.6 Waste Recycling, Treatment and Disposal

This section describes the status quo of waste disposal facilities; treatment facilities; recyclers; illegal dumping; garden; and builder's rubble waste.

5.6.1 Status Quo of Waste Recyclers

There are numerous companies that are active in recycling activities within SBM. The municipality has appointed a service provider to operate the MRF at Vredenburg waste disposal facility. The service provider is responsible to currently does not have information about their collection procedures or recycling volumes but aims to incorporate data obtained from recyclers into the strategic plan.

There are also informal recyclers that visit the waste disposal facilities daily to reclaim recyclable material. They only recycle specific material depending on the available market. There are currently 30 reclaimers on Vredenburg waste disposal facility and 15 on Langebaan waste disposal facility.

5.6.2 Status Quo of Waste Disposal Facilities

The SBM possess the following waste disposal facilities see Figure 7:

- Langebaan waste disposal facility
- Vredenburg waste disposal facility
- Vredenburg Material recycling centre (MRF)
- Hopefield waste transfer station
- Diazville waste transfer station
- Kalkrug waste transfer station
- Laingville waste transfer station

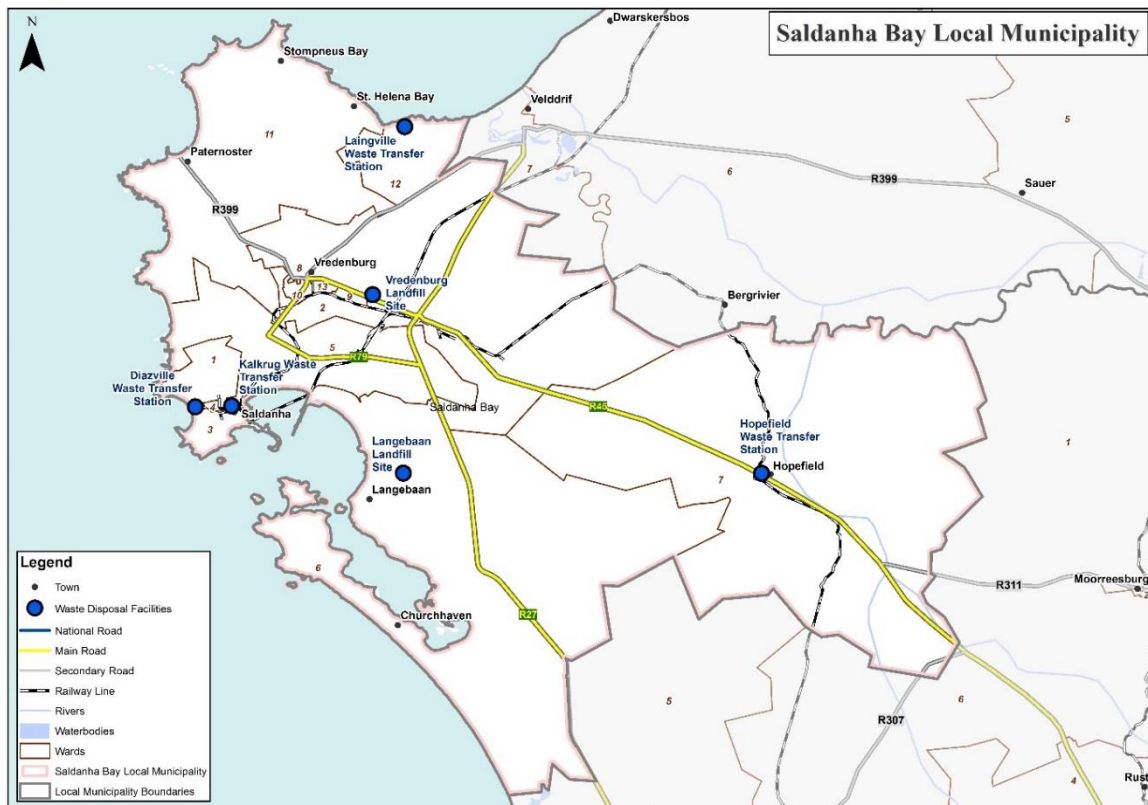


Figure 7: Saldanha Bay Municipality indicating locality of waste facilities

5.6.2.1 Langebaan waste disposal facility

The Langebaan waste disposal facility is located approximately 2.7km North East of the Langebaan town. The waste disposal facility is a Class G:S:B- waste disposal site in terms of Section 20 of the Environment Conservation Act (Act 73 of 1989), permitted by the Department of Water Affairs and Forestry on 4 March 1998. The waste disposal facility has been issued with a decommissioned license in February 2016. Table 9 provides a summary of pertinent information related to the Langebaan waste disposal facility.



Figure 8: Langebaan waste disposal facility

Table 9: Langebaan waste disposal facility details

Item (from Minimum requirements (DWAF, 1998))	Waste disposal facility Particulars
Position of site	S33°03'42.05" E18°04'45.84"
License to operate	License number: 16/2/7/G100/D88/Z1/P293
Year issued	1996
Classification of site	G:S:B–
Life span	Unknown
Expected year of closure	Unknown
Type of operation	Cell method
Size	Unknown
Airspace available	Unknown

Item (from Minimum requirements (DWAF, 1998))	Waste disposal facility Particulars
Cover material available	Excess builders' rubble
Operated	SBM
Regulatory compliance	Yes
Daily Cover	Waste is covered daily
Access control	Yes
Buffer	Yes
Type of equipment	Case Front End Loader and Ford Ranger Bakkie
Ablution facilities	Compliant
Guardhouse	Compliant
Storm water management	No
Leachate management	No.
Record keeping	Compliant
Signage	Compliant
Recycling	Yes, not formalised

5.6.2.2 Vredenburg waste disposal facility

The Vredenburg waste disposal facility is located approximately 3km South East of the Vredenburg town. The waste disposal facility is a Class G:M:B- waste disposal site in terms of Section 20 of the Environment Conservation Act (Act 73 of 1989), permitted by the Department of Water Affairs and Forestry in 1995. Table 10 provides a summary of pertinent information related to the Vredenburg waste disposal facility.



Figure 9: Vredenburg waste disposal facility

Table 10: Vredenburg waste disposal facility details

Item (from Minimum requirements (DWAF, 1998))	Waste disposal facility Particulars
Position of site	S32°55'08.67" E18°03'02.14"
License to operate	License number: 16/2/7/G100/D53/Z1/P272
Year issued	1995
Classification of site	G:M:B—
Life span	3 years
Expected year of closure	2020
Type of operation	Cell method
Size	14ha

Item (from Minimum requirements (DWAF, 1998))	Waste disposal facility Particulars
Airspace available	180 000m3
Cover material available	yes
Operated	SBM
Regulatory compliance	Yes
Daily Cover	Waste partially covered daily
Access control	Compliant
Buffer	Compliant
Type of equipment	2 Front End Loaders and 1 tipper truck
Ablution facilities	Compliant
Guardhouse	Compliant
Storm water management	Partially compliant
Leachate management	No.
Record keeping	Compliant
Signage	Compliant
Recycling	Informal recycling

5.6.2.3 Closed waste disposal facilities

The Kalkrug waste disposal facility is closed and a closure permit is issued, rehabilitation of the waste disposal facility has not yet commenced as required in the license conditions. The Hopefield waste disposal facility has been closed but a closure license has not been issued.

5.6.2.4 Vredenburg Material recycling centre (MRF)

Vredenburg MRF is situated at the entrance of the Vredenburg waste disposal facility. The municipality appointed Wastegro through a tender process to operate the MRF, the service provider will commence with operations during March 2016.

The MRF is equipped with a sorting conveyor belt and two balers. Waste recycled is weighed and documented according to the different waste categories.

5.6.2.5 Hopefield waste transfer station

The Hopefield waste transfer station, situated on the outskirts of Hopefield on the R45 (33°03'45.23"; 18°21'30.92"E). The site is open daily from 08:00 – 16:30 Mondays to Fridays, 08:00 – 14:00 on Saturdays and closed on Sundays. There is seven 6m³ skips available to dispose waste in.

Community members bring their waste directly to the transfer station and dispose their waste directly into skips. Full skips are taken to the waste disposal facility where waste is disposed at Vredenburg waste disposal facility. Security guards are available to ensure that waste is disposed of properly during the day and night.



Figure 10: Hopefield waste transfer station

5.6.2.6 Diazville waste transfer station

The Diazville waste transfer station, situated on the outskirts of Diazville on the Diaz road (33°00'34.83"; 17°54'19.66"E). The site is open daily from 08:00 – 16:30 Mondays to Fridays, 08:00 – 14:00 on Saturdays and closed on Sundays. There is four 6m³ skips available to dispose waste in.

Community members bring their waste directly to the transfer station and dispose their waste directly into skips. Full skips are taken to the waste disposal facility where waste is disposed at Vredenburg waste disposal facility. Security guards are available to ensure that waste is disposed of properly during the day and night.



Figure 11: Diazville waste transfer station

5.6.2.7 Kalkrug waste transfer station

The Kalkrug waste transfer station, situated in Saldanha Bay Town on the Silverman Avenue (33°00'32.69"; 17°56'05.91"E). The site is open daily from 08:00 – 16: 30 Mondays to Fridays, 08:00 – 14:00 on Saturdays and closed on Sundays. There is three 6m3 skips available to dispose waste in.

Community members bring their waste directly to the transfer station and dispose their waste directly into skips. Full skips are taken to the landfill site where waste is disposed at Vredenburg waste disposal facility. No security guards are available due to the fact that the transfer station borders other council services.

5.6.2.8 Kalkrug waste transfer station

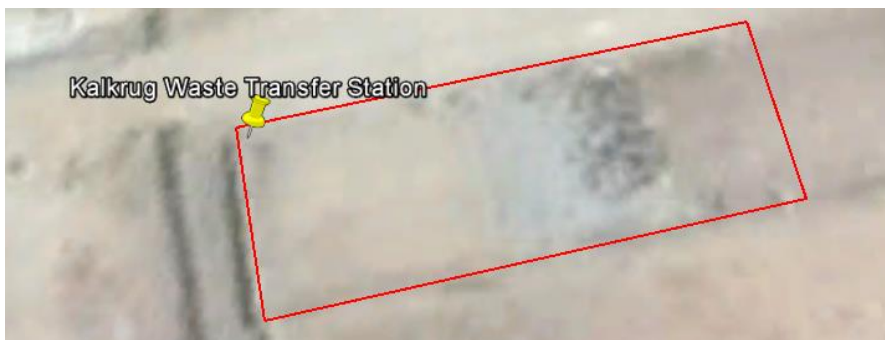


Figure 12: Kalkrug waste transfer station

5.6.2.9 Laingville waste transfer station

The Laingville waste transfer station, situated on the outskirts of Laingville on Tontelblom street (32°47'09.45"; 18°04'22.91"E). The site is open daily from 08:00 – 16: 30 Mondays to Fridays, 08:00 – 14:00 on Saturdays and closed on Sundays. There is six 6m3 skips available to dispose waste in.

Community members bring their waste directly to the transfer station and dispose their waste directly into skips. Full skips are taken to the waste disposal facility where waste is disposed at Vredenburg waste disposal facility. No security is available to assist with illegal activities at this waste transfer station.



Figure 13: Laingville waste transfer station

5.6.3 Status Quo of illegal dumping (Bulk cleansing)

Several areas on the outskirts of informal settlements have been identified as illegal dumping areas in the municipality. General waste, builder's rubble and garden waste are waste types illegally dumped. SBM removes illegally dumped waste when required at additional expense. This is a big problem because areas where illegal dumping takes place receive waste management services and cleaning up waste is costly and requires additional manpower.

The Municipality must address illegal dumping by enforcing the By-Laws and imposing fines. Illegal dumping is prominent in informal settlements. In order to address the problem of illegal dumping, an awareness campaign should be initiated. The objective of this campaign is to make the communities aware of health and environmental impacts of illegal dumping. A programme has been implemented to address illegal dumping, Table 11.

Table 11: Open spaces cleaning programme

Open spaces cleaning programme	
January 2017	
2 to 6	Saldanha
9 to 13	St Helena

Open spaces cleaning programme	
16 to 20	Vredenburg
23 to 27	Paternoster/Grease/Emergency
February 2017	
30/1 to 3	Vredenburg
6 to 10	Saldanha
13 to 17	St Helena area
20 to 24	Hopefield/Langebaanweg area
March 2017	
27/2 to 10	Saldanha
13 to 17	St Helena area
20 to 24	Paternoster/Grease/Emergency
27 to 31	Vredenburg
April 2017	
3 to 7	Saldanha
10 to 14	St Helena area
17 to 21	Vredenburg
24 to 28	Saldanha
May 2017	
2 to 5	Paternoster/Grease/Emergency
8 to 12	St Helena area
15 to 19	Saldanha
22 to 26	Vredenburg

Open spaces cleaning programme	
29 to 2/6	Hopefield/Langebaan
June 2017	
5 to 9	St Helena area
12 to 16	Saldanha
19 to 23	Vredenburg
26 to 30	Paternoster/Grease/Emergency

SBM has embarked on Waste Management Programmes, with the view to changing the mind-set and behavioural practices of all the communities through the Expanded Public Works Programme (EPWP). Transgressors caught in the act receives a notice to remove the illegal dumped waste and if they do not comply within the provided timeframe a fine is issued.

5.6.4 Status Quo of Garden Waste and Builder's Rubble

The municipality has four transfer stations where residents can dispose their garden waste in skips. Full skips are transported to the Vredenburg waste disposal facility for disposal. Businesses involved in garden services are not allowed to dispose their waste at the transfer station; they must take the waste directly to the waste disposal facility.

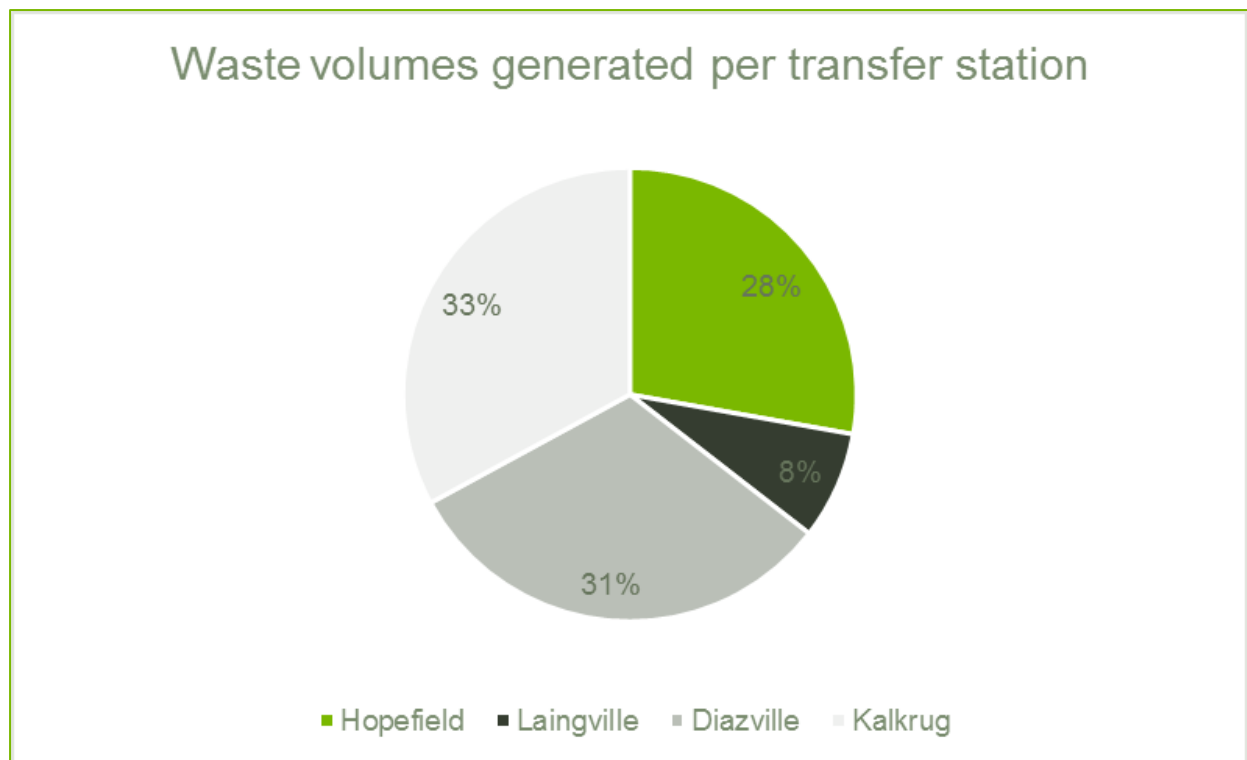


Figure 14: Waste volumes generated per transfer station

5.7 Status of Waste Collection Services

Waste collection services are provided in all wards to a total of 32 377 households and 10 623 other service points (comprising businesses; estates; small holdings, flats, townhouses and public institutions). Waste collection takes place daily (in the CBD, schools, businesses, hotels, hospital, flats; and filling stations) and weekly for households. SBM is ranked number one in South Africa for providing refuse removal services, see Table 12.

Table 12: Waste services within SBM⁷

Refuse Disposal	Percentage
Removed by local authority/private company at least once a week	96,6%
Removed by local authority/private company less often	0,5%
Communal refuse dump	0,2%
Own refuse dump	2,1%
No rubbish disposal	0,4%
Other	0,2%

From the table above it can be derived that households in indigent areas do not receive a formal waste collection service and therefore will be inclined to dispose their waste illegally.

5.7.1 Waste Removal

The estimated number of households in the Municipality is 29 951, the municipality collects waste from 96% of the households. Table 12 above illustrates how waste removal is handled in the area. According to Stats SA, (2011) 97.1% of households did receive a collection service by the local authority/private company and less than 3% have no access to household waste removal services.

The Municipality offers a high level access to waste management in the urban areas. SBM is divided in to different service areas, see Table 13. Households are provided with 240l wheelie bins and instructed place their bins on the day of collection on the kerbside or demarcated area for collection as per a specific refuse collection programme. Compactors are used to collect the waste.

MSW collected in all the towns is disposed of at the Vredenburg waste disposal facility. Garden waste and builder's rubble removal are also disposed of at the waste disposal facilities and the waste transfer stations.

⁷ Statssa 2011

Table 13: Collection areas within SBM

Collection areas				
Monday	Tuesday	Wednesday	Thursday	Friday
Vredenburg South	Jacobsbaai	Langebaan	Paternoster Laingville St Helena Bay	Hopefield
Louwville	Middelpos			Koperfontein
Louwville North	Diazville			Langebaanweg
	Diazville West			Vredenburg North
	RDP Area			Langebaan Airforce Base
	White City			Green Village
	Saldanha Town			Witklip
	Blue Water Bay			

The distances from Vredenburg town to other SBM towns are indicated in Figure 15 below.

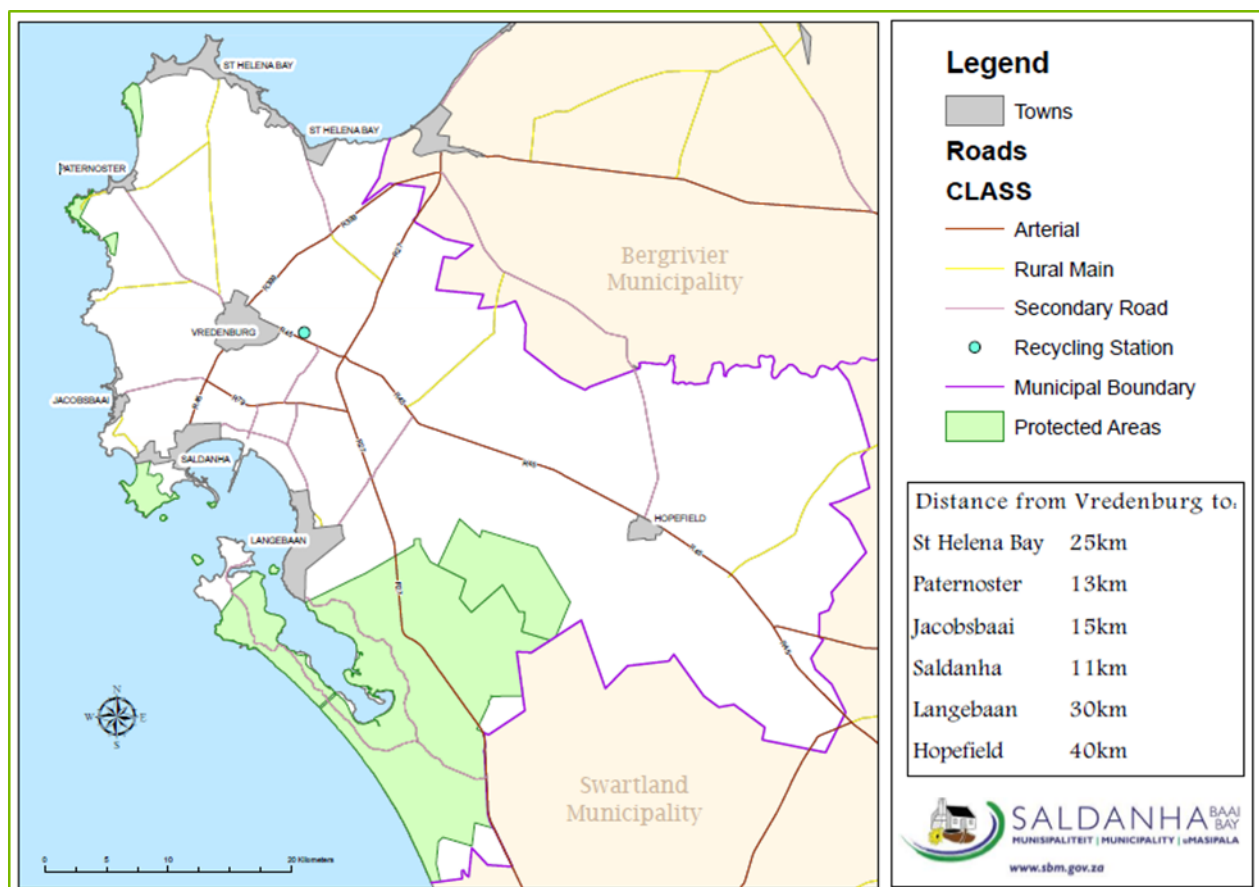


Figure 15: Distances from Vredenburg town to other SBM towns

5.8 Reporting on the Integrated Pollutant and Waste Information System (IPWIS)

The SBM is reporting to the Western Province, Integrated Pollutant and Waste Information System, the waste categories reported on are MSW, Construction and demolition waste and garden waste for both waste disposal facilities on a monthly basis.

5.9 Waste Management Financing

5.9.1 MIG and/ or Capital Projects

The major Medium term infrastructure development (MTREF) development objectives for waste management in the municipality can be summarised as follows:

Table 14: Capital budget

Capital budget					
	Final Budget 2016/17	Final Budget 2017/18	Final Budget 2018/19	Total MTREF	Draft Budget 2019 +
Solid Waste: Refuse Removal	3,500,000	1,950,000	-	5,450,000	8,000,000
Solid Waste: Waste Disposal Facilities	11,680,000	5,100,000	14,714,431	31,494,431	10,100,000
Total	15,180,000	7,050,000	14,714,431	36,944,431	18,100,000

Main projects affected is the Vredenburg waste disposal facility extension and the Langebaan waste disposal facility closure and rehabilitation.

5.9.2 Operating budget: Refuse removal

Waste Management Services are budgeted for, below shows that the waste management department operated at a surplus for the 2014/2015 financial year and will be operating at a deficit for the next two financial years budgeted for.

5.9.2.1 Refuse removal

Table 15: Refuse removal budget

Operating budget			
	Actual 2015/16	Budget 2016/17	Budget 2017/18
Expenditure	33,527,564	34,602,590	37,225,960
Revenue	(62,649,691)	(69,368,842)	(74,106,755)
Surplus/Deficit	(29,122,127)	(34,766,252)	(36,880,795)

5.9.2.2 Waste Disposal Facilities

Table 16: Waste Disposal budget

Operating budget			
	Actual 2015/16	Budget 2016/17	Budget 2017/18
Expenditure	25,776,531	28,419,382	23,764,557
Revenue	(621,655)	(874,522)	(942,560)
Surplus/Deficit	25,154,876	27,544,860	22,821,997

5.9.2.3 Total

Table 17: Total budget

Operating budget			
	Actual 2015/16	Budget 2016/17	Budget 2017/18
Expenditure	59,304,095	63,021,972	60,990,517
Revenue	(63,271,346)	(70,243,364)	(75,049,315)
Surplus/Deficit	3,967,251	7,221,392	14,058,798

5.9.3 Tariff Structure

Table 18: Approved refuse removal tariffs for 2015/16

TARIFFS (WITHIN MUNICIPAL AREA)	
Financial year	2016/117
Percentage increase	12%
Vat excluded	R
The following monthly fee is payable in respect of the collection, removal and disposal of garbage	
Single Residential Sites	
For removal of 0.240m ³ once a week	163.16
Business and industrial premises	
For the removal of 0.240m ³ (240 litres) once a week	166.67
For the removal of 0.240m ³ (240 litres) twice a week	251.75
For the removal of 0.240m ³ (240 litres) three times a week	332.46
For the removal of 6m ³ (240 litres) per removal	1511.40
For rent of 6m ³ skip, no removal per month (subject to availability)	500.00
Additional fee if services during after hours, public holidays, Saturdays and Sundays are requested and rendered (optional)	293.86
Other sites	
For special collections of 0.240m ³ (240 litres) once a week	166.67
Special and expired food removals	
For special collections per 0.240m ³ (240 litres) or part thereof per removal	332.46
Removal and disposal of animal carcasses	
Removal and disposal of cats	8.77
Removal and disposal of dogs	17.54

TARIFFS (WITHIN MUNICIPAL AREA)	
Financial year	2016/117
Percentage increase	12%
Vat excluded	R
Disposal of larger animals	131.58
<p>The following should be noted with regards to removal and disposal of animal carcasses:</p> <p>Animals for both removal and disposal is subject to a formal letter from a Veterinary professional stating that the animal has not died from an infectious or contagious disease.</p> <p>The letter must identify the animal by means of a number or code and must correspond with the code/number on the formal letter. Animals for removal and disposal (cats/dogs) must be placed in clearly marked plastic bags.</p> <p>Large animals must be brought to the waste disposal facility at own cost, the tariff is for disposal only.</p>	
Special containers	
The use of special containers must, after consultation with the consumer, be approved by the relevant departments. The tariff for such containers shall be determined by the conversion of the content in terms of standard containers and taking into account the related additional expenses.	
Amusement parks, circuses and similar entertainment businesses	
For removal per 0.240m ³ , or part thereof	332.48
For rent 6 m ³ skip, no removal per day	296.86
For removal 6m ³ skip	1586.84
Schools, churches, and charity events (Reduced tariff only applicable if recycling initiatives is implemented)	
For removal per 0,240 m ³ , or part thereof	100.00
For rent 6 m ³ skip, no removal per 3 days	87.72
For removal 6 m ³ skip	476.32
Garden refuse removal	

TARIFFS (WITHIN MUNICIPAL AREA)	
Financial year	2016/117
Percentage increase	12%
Vat excluded	R
Garden waste which is put into mobile garbage bin, with household refuse	No charge
Additional refuse per load paid in advance	410.53
OTHER REMOVALS	
Vehicle wrecks	
Request by the occupier for the removal of car wrecks payable in advance	410.53
Building rubble	
Removal of 6m ³ skip per removal	1511.40
Hiring of 6m ³ skip per day	293.86
Dumping of used tyres (Per tyre)	
Car and LDV tyres up to 17"	7.02
Truck tyres	16.67
Tractor and other extremely large tyre	64.91
Cape Education Department Schools	
5% discount on the tariff under the category Other sites: Removal of 240 litres once a week	
Langebaanweg	
For removal of .0240m ³ once a week by mobile container system	219.30
Availability charges for vacant erven	
Tariff per month	60.53

TARIFFS (WITHIN MUNICIPAL AREA)	
Financial year	2016/117
Percentage increase	12%
Vat excluded	R
Tariff per annum	725.44
Waste Disposal sites	
The following tariffs will be applicable to Contractors, Industrialists, businesses and any person outside the council's jurisdiction (Per Load)	
Vehicles up to 1 ton per vehicle load capacity (Landfill and transfer stations)	Free
Vehicles > 1 up to 2 ton per vehicle load capacity (Landfill Only)	100.00
Vehicles > 2 up to 3 ton per vehicle load capacity (Landfill Only)	200.00
Vehicles > 3 up to 4 ton per vehicle load capacity (Landfill Only)	300.00
Vehicles > 4 up to 5 ton per vehicle load capacity (Landfill Only)	400.00
Vehicles > 5 up to 6 ton per vehicle load capacity (Landfill Only)	500.00
Vehicles > 6 up to 7 ton per vehicle load capacity (Landfill Only)	600.00
Vehicles > 7 up to 8 ton per vehicle load capacity (Landfill Only)	700.00
Vehicles > 8 up to 9 ton per vehicle load capacity (Landfill Only)	800.00
Vehicles > 9 up to 10 ton per vehicle load capacity (Landfill Only)	900.00
Vehicles > 10 ton per vehicle load capacity (Landfill Only)	1500.00
Vehicles > 20 ton per vehicle load capacity (Landfill Only)	3000.00
Note: For large projects which produces clean filling material of more than 200 cubic metres a special arrangement will be made to dispose of cover material free of charge, subject to the prior approval of the material as adequate cover material	
Dumping of refuse coming from residential areas are free subject to the following:	

TARIFFS (WITHIN MUNICIPAL AREA)	
Financial year	2016/117
Percentage increase	12%
Vat excluded	R
An SBM service account must be presented. The consumer must be an owner, occupier of the residential premises. Weight of materials disposed must be less than 1 ton per vehicle load capacity.	
Special Services	
Safe disposal of asbestos (per sheet or equivalent mass per kg)	55.26
Safe disposal of florescent tubes (Per tube)	5.26
Green chippings per m ³ (For sale to public, no delivery service chippings to be collected at waste disposal facility)	9.65
Damaged/stolen refuse bins (replacement cost)	
240 litre container - per container/service	250.00
DEPOSITS	
The deposits paid by consumers, (excluding the rural consumers from the RSC) an amount equal to the levy, for two months' consumption based on the actual or anticipated consumption, subject to a minimum of:	
Households	326.00
Businesses/ Other sites	503.00
Industrial Premises/Special Removals	666.00
Skips	3023.00

5.10 Organisational and Institutional Matters

Waste Management Division falls under the Directorate Engineering and Planning Services. Mr David Wright is appointed as the Waste Management Officer as required in terms of NEWMA. The Waste Management Officer (WMO) designated in terms of Section 10 (3) of NEMWA, is responsible for ensuring that the dedicated waste management staff and the services provided by these staff meet the requirements of the Policy and are compliant with the legislation of South Africa. The WMO is also responsible for the coordination of waste management activities to ensure integration. It is the responsibility of all staff to adhere to all relevant legislation, including the IWM Policy, and this IWMP.

Expanded Public Work Programme (EPWP) workers have also been deployed on a temporary basis to assist with waste management activities.

The Council of SBM has reviewed and amended its organisational structure in 2013⁸, to effect and efficiently deliver services in line with the overarching Key Performance Areas and Strategic Objectives of the organisation.

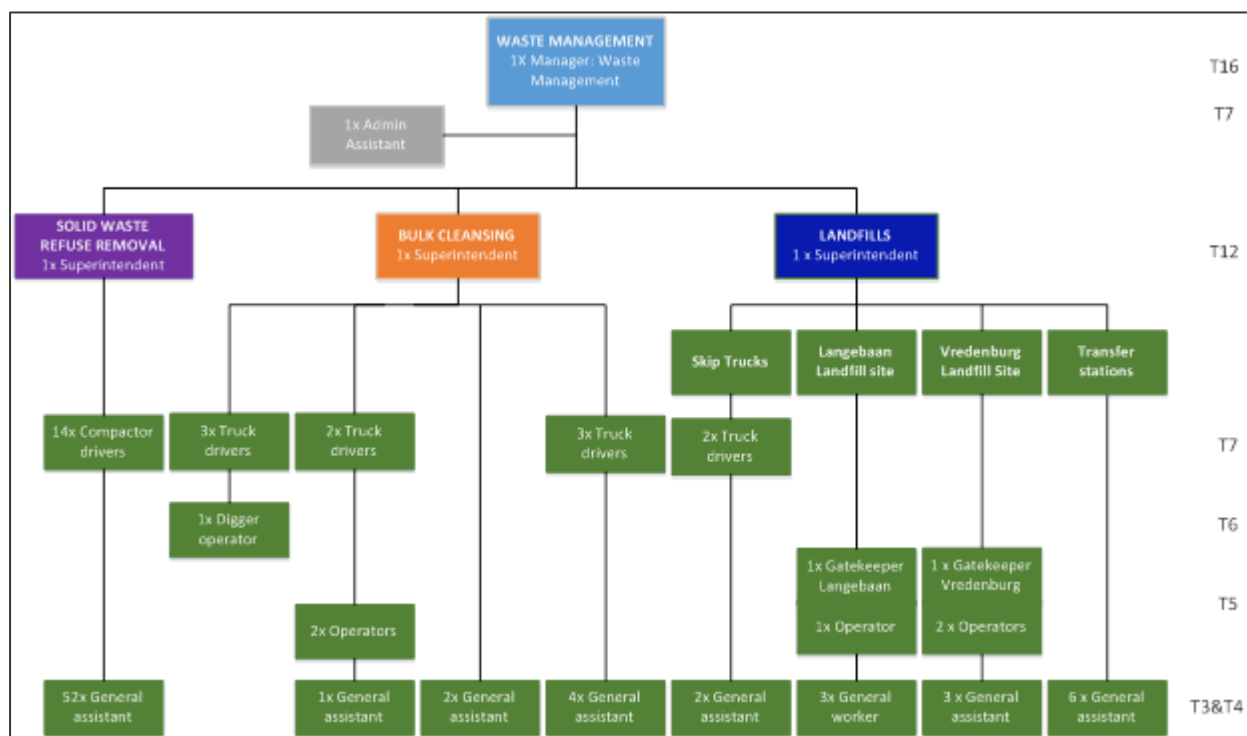


Figure 16: SBM Organisational structure

To render effective waste management services a gap has been identified between the manager and the operational level to assist with waste management operations. A post of Technician: Solid Waste Operations on a T14 level is required to fill this gap. Bulk cleansing has a shortage in personnel as there is only one funded position with the rest being unfunded vacant positions.

No provision was made for law enforcement activities on the organisational structure.

5.11 Equipment

5.11.1 Fleet used for refuse collection

Registration Number	Make	Vehicle Description	Age	Condition
CFG11085	Nissan	Compactors	16 years	Poor
CFG23683	Nissan	Compactors	7 years	Good

⁸ IDP 2012 – 2017 Revision 3 2015/2016

Registration Number	Make	Vehicle Description	Age	Condition
CFG9375	Nissan	Compactors	2 years	Good
CFG22616	Mercedes Benz	Compactors	2 years	Good
CFG27649	Mercedes Benz	Compactors	2 years	Good
CFG18569	Nissan	Compactors	12 years	Poor
CFG33020	Isuzu	Compactors	1 year	New
CFG3313	Nissan	Compactors	4 years	Good
CFG14590	Nissan	Compactors	14 years	Poor
CFG30686	Mercedes Benz	Compactors	2 years	Good
CFG24263	Nissan	Compactors	10 years	Poor
CFG5948	Nissan	Compactors	18 years	Poor
CFG11573	Nissan	Compactors	8 years	Poor
CFG37600	Nissan	Compactors	4 years	Good
CR3611	Nissan	Compactors	17 years	Poor
CFG21514	Ford Ranger	Bakkie	2 years	Good
CFG14694	Ford Bantam	Bakkie	8 years	Operational
CFG	Nissan	Bakkie	4 years	Good

5.11.2 Fleet used for Waste disposal facilities

Registration Number	Make	Vehicle Description	Age	Condition
-	Bell	Landfill Compactor	5 years	Operational
CFG 31607	Bell	Loader	2 years	Good
CFG 17192	Nissan NP300	Bakkie	4 years	Operational

Registration Number	Make	Vehicle Description	Age	Condition
CFG 18352	Case	Front End Loader	11 years	Poor
CFG 8791	Ford	Bakkie	15 years	Operational
CFG 13925	Mercedes Benz	Skip Truck	1.5 years	Good
CFG 13340	Mercedes Benz	Skip Truck	1.5 years	Good
CFG 27301	Ford Ranger	Bakkie	2 years	Good
-	Aurora: H20DE	Baler	1 year	Good
-	BH20D Bulkmatic	Baler	2.5 years	Good
CFG 15255	UD 85	Tipper truck	6 years	Operational

5.11.3 Fleet used for transfer stations

Registration Number	Make	Vehicle Description	Age	Condition
CFG 13340	Mercedes Benz	Skip truck	1.5 years	Good
CFG 13925	Mercedes Benz	Skip truck	1.5 years	Operational
CFG 19788	Nissan	Grab Truck	8 years	Poor
CFG 88305	Nissan	Grab truck	5 years	Operational

5.11.4 Fleet used for cleansing operations

Registration Number	Make	Vehicle Description	Age	Condition
CFG25621	Isuzu	Tipper trucks		New
CFG2597	Nissan	Tipper trucks		Good
CFG2522	Nissan	Tipper trucks		Good
CFG5305	Nissan	Grab trucks		Good
CFG19788	Nissan	Grab trucks		Good

Registration Number	Make	Vehicle Description	Age	Condition
CFG22546	Nissan	Skip trucks		Operational
CFG14412	Nissan	Skip trucks		Good
CFG11647	Ford Ranger	Bakkie		New
CFG27193	Ford Ranger	Bakkie		New
CFG11656	John Deere	Tractor		Good
-	BC100XL	Chipper		New

NOTE: The condition of vehicles is based on subjective assessment and not mechanical assessment.

Vehicles aged between 8 and 18 years are in a poor condition. A replacement plan should be developed for these vehicles.

5.12 Other Waste Management Systems and Practices

5.12.1 Existing waste avoidance in SBM

Communities are educated about and encouraged to avoid generating waste. The Municipality uses EPWP to conduct education campaigns in communities highlighting waste management issues in the community and encouraging community members to avoid generating waste.

5.12.2 Waste minimisation strategies

The majority waste minimisation strategies within the municipality are private initiatives; the municipality appointed Wastegro through a tender process to operate the MRF, the service provider will commence with the operations during March 2016. Langeberg town are also separating waste at source. Recyclable waste is collected by informal recyclers/re-claimers at the waste disposal facilities daily.

5.12.3 Waste Reduction

The municipality encourages communities to reduce their waste through education campaigns through the EPWP workers that have been employed.

5.12.4 Composting

There are no formal composting activities currently taking place. The municipality is investigating options for developing a composting plant. The plan is to compost garden refuse instead of disposing it at the waste disposal facility. A private company Magic organic is a private initiative currently producing compost from garden waste. SBM chip garden waste for use of mulch at the Vredenburg waste disposal facility.

5.12.5 Alternative waste treatment initiatives

SBM is currently in negotiations with West Coast Power Solutions.

5.12.6 Public cleansing

Public cleansing involves the cleansing of streets (gutters and kerbs) and open spaces (government and municipal property). The function is currently the responsibility of Community Services department.

5.12.7 Awareness and education

The municipality uses services workers employed through the EPWP to raise public awareness and education about waste management issues in the municipality. The workers have been involved in conducting surveys required by waste management services, educating communities about waste and responsible disposal of waste and organising events for the annual environmental calendar.

A quarterly awareness bulletin is issued in the local Weslander newspaper with regards to littering and recycling.

5.13 Goals and Objectives from the 2nd (2011) IWMP

In the 2011 IWMP goals for improved waste management service delivery were set and recommendations on how to achieve the goal were made. Table 19 below presents a summary of the objectives and status of implementation.

Table 19: Implementation plan 2011

Implementation plan 2011	
Action	Status
Public and awareness campaigns	EPWP utilised to inform and educate the public specifically the informal settlements.
Quantifying prevention	A waste information system has been implemented. A GIS need to be populated and maintained.
Post collection services	A service provider is appointed to operate the MRF.
Post collection composting	A feasibility study need to be undertaken
Engineered waste disposal facilities	Additional area is identified for the expansion of the Vredenburg waste disposal facility
Monitoring of the waste disposal	All waste destined for disposal are monitored for compliance SBM disposal facilities

Implementation plan 2011	
Action	Status
Collection service review	Waste collection services are continuously reviewed to make sure it is efficient and value for money.
Data compilation	<p>Volumes are recorded at the Vredenburg waste disposal facility.</p> <p>A Weigh pad has been installed at the Langebaan waste disposal facility.</p>
Cleansing	<p>Community services is responsible for street cleansing.</p> <p>SBM attend to illegal dumping as and when required and hot spots are cleaned on regular basis per program</p>

6 Gap Analysis and needs assessment

6.1 Governance

6.1.1 Waste Policy and By-Laws

Waste policy: A policy outlines what a government institution hopes to achieve and the methods and principles it will use to achieve them. A policy document is not a law but it will often identify new laws needed to achieve its goals. A draft waste policy is available but need to be approved by the council.

By-Laws: A draft SBM By-Law for Waste Management was compiled and should be approved by the municipality. The draft waste By-Laws must be promulgated to put in place the necessary institutional and legal frameworks that will enable SBM to achieve its goals. Compliance monitoring of the By-Laws will also need to be implemented. A “polluter pays” system must be implemented to fine transgressors disposing waste illegally and the tariff structure must reflect it.

The afore mentioned is considered a high priority project as the of Waste Policy provides the framework for Waste Management in the municipality and the By-Laws provide the legislative power to enforce the goals in the Waste Policy.

6.1.2 Institutional and planning matters

The main purpose of an institutional arrangement is to present a strategic plan on how to grow the institutional capacity of the Waste Management Division in line with its future plan. The institutional structure was designed to support the growth of Waste Management Services as further investment occurs, thereby ensuring that there is sufficient capacity to manage the work in the foreseeable future, in line with the strategy.

The approved structure should be reviewed to include the enforcement and education and awareness function.

All the vacant posts should be funded and filled to render an efficient waste management service; to alleviate the demand for waste services; and to ensure the municipality has the required capacity. As part of the future institutional strategy the Waste Management Division needs to develop tasks that are required throughout the division to ensure sustainability and effective service provision of the department. These tasks may include:

- Developing a training plan to address skills shortages and gaps;
- Implementing annual skills and training matrix program to monitor development; and
- Proactive recruitment and a needs analysis should be undertaken to ensure that the right people, with the right skills are in the right place at the right time. This should be determined by continuous evaluation and enactment of the desired future state and activities conducted to reach this and alignment of institutional practices therewith.

6.2 Sustainability Study

The overall aim of an economic waste sustainability study is to implement the waste hierarchy and reduce the amount of waste diverted to landfill, as well as to make recommendations to improve the economy and effectiveness of waste management through initiatives to move up the waste hierarchy and therefore establish long term priorities for waste management.

6.3 Waste Avoidance

Public awareness and education plays a critical part in developing a culture of waste avoidance in a municipality. The campaign will highlight ways in which the public can avoid or prevent waste generation and suggest alternatives to high waste products or activities. This is in line with the National Waste Management Strategy 2011 (NWMS) which is to ensure that communities are educated about waste that can be recycled and reused.

This Waste Avoidance Project is considered a medium priority project as it will need to build on the completion of other projects such as the implementation of the Waste Policy and enforcement of the By-Law. It will include the development of Waste Prevention Guidelines for various sectors of the business community as well as the general public (e.g. waste separation at source and manufacture take back initiatives).

The project will explore setting of realistic waste avoidance targets and means to encourage households, schools and businesses to participate in the initiative.

6.4 Disposal Facilities

6.4.1 Extension and upgrading of the Vredenburg waste disposal facility

A study is underway to extend the Vredenburg waste disposal facility. The waste disposal facility should be properly audited to determine non-compliance and corrective measures to be made.

6.4.2 Closure of Langebaan waste disposal facility

The Langebaan waste disposal facility will be closed and rehabilitated. A waste transfer station handling building material and garden waste will be built to replace the waste disposal facility. The closed waste disposal facilities should be properly audited to determine non-compliance and corrective measures to be made.

6.4.3 Waste transfer stations/ drop off facilities

Waste transfer stations and drop off facilities play an important role in a community's total waste management system, serving as the link between a community's waste collection program and a final waste disposal facility. SBM should consider to construct two additional waste transfer stations in Paternoster and St Helena Bay. Waste transfer stations is designed with a designated receiving area where waste can be discharged and high-volume transfer vehicles used for the economical shipment to the SBM waste disposal facilities.

Provision should be made at the municipality's waste transfer stations to for drop of facilities for recyclable material. Containers should be made available to accommodate different categories of recyclable material.

6.5 Treatment and Recycling

6.5.1 Establishing Separation at Source Initiative

There is currently limited separation at source initiative at SBM, only Langebaan. Promotion of expanding separation at source will require an education and training programme as well as support from the community. Separation at source must then be supported by a service delivery system capable of transporting non-organic recyclables and remaining waste. SBM can start implementing a two bag system separating waste in the rest of the municipality into wet and dry waste to encourage waste separation. The initiative should aim to change public attitudes and behaviour towards waste. Local campaigns should be run to encourage people to Reduce, Reuse and Recycle waste.

6.5.2 HCRW Treatment Facilities

HCRW generated from public and private health care facilities could be disposed of illegally. An extension of the medical waste removal service provider is to be considered and/or the provision of HCRW treatment facilities. Although this is not a function of SBM Waste Management this should be reported to the relevant department for the safe handling of HCRW.

6.5.3 Hazardous waste

Handling of hazardous waste is not a function of SBM Waste Management this should be reported to the relevant provincial department for the safe handling of hazardous waste this include hazardous in the agricultural sector.

6.5.4 Garden waste and builders' rubble

In order to prolong the lifespan of the Vredenburg waste disposal facility waste separation can be implemented at the drop-off facilities and transfer stations in the short term. Garden waste and builders' rubble can be separated and ultimately diverted from the waste disposal facility. Builders' rubble can be used as cover material after it is sorted and garden waste can be transported to a composting plant.

6.6 Collections

6.6.1 Collection Services

One of the key features of a developmental state is to ensure that all citizens especially the poor and other vulnerable groups have access to basic services. The Constitution of the country places the responsibility on government to ensure that such services are progressively expanded to all, within the limits of available resources. Government policy on most of these issues is progressively moving towards universal access including Waste Management.

To ensure a cost effective collection service and make provision for expanding of collection services the municipality:

- Should consider implementing a second shift. Collecting waste in shifts ensures that the use of the trucks is optimised and that households receive an effective waste collection service. Collection staff will no longer required to work overtime on a regular basis. The municipality will save on overtime payment, get double value for money from the buying/lease agreement of the vehicles, the collection staff will not be overworked, and additional jobs are created.
- Should investigate how to deal with the waste generated of households in indigent areas to prevent illegal disposal of waste.

6.7 Fleet Management and Equipment

6.7.1 Challenges faced with regards to equipment and logistics

Municipalities are faced with challenges with regards to fleet.

- Municipalities do not always analyse or investigate the vehicle and equipment types required for waste collection;
- The above has an impact on the selection and design of vehicles / plant / equipment in terms of “right fit for purpose” and on the operating and maintenance costs of vehicles / plant and equipment.
- The waste management fleet is one of the municipality’s most valuable assets and therefore should be maintained as per manufacturer’s conditions.

6.7.2 Equipment/vehicle considerations (collection/transportation)

The following should be considered when determining the equipment needed to execute the waste management services effectively.

- Waste type to be removed (recyclable or non-recyclable);
- Waste volumes;
- Frequency of collection;
- Geographical area of collection;
- Container / receptacle type(Method of collection);
- Separation at source;
- Collection of recyclable waste;
- Distance between collection points and disposal facilities;
 - Communal collection points
 - Transfer station / recycling / garden site/Waste disposal facility
 - Drop-off centre’s / shopping centre collection points
- Road conditions;
- Traffic conditions;
- Transfer Station conditions;
- Driver /Operator skills / know how;
- Maintenance infrastructure (Internal / external);
- Supplier after sales support;
- Efficiency / Fuel consumption (carbon footprint); and
- Asset optimization.

6.7.3 Equipment Required

To determine the optimal use of the fleet the fleet calculation model can be used to determine the number of vehicles needed to properly execute the waste management function.

Example:

- Calculate the number of trucks required to transport 30 tonnes of waste per day.
- Containers are picked up daily and are 6m³ each.
- Waste inside the containers weighs approximately 5 tonnes

Table 20: Fleet Calculation Model

Fleet Calculation Model	
Data	
Total collection time per day (Hours)	8 hours
Total collection time per day (Minutes)	480 min
Off route time/ delays per day	10 min
Time to drive to and from the depot min	10 min
Time to drive to disposal facility	20 min
Time to drive from disposal facility	20 min
Time to off load at the disposal facility	15 min
Time to pick up container (load onto vehicle)	5 min
Time to put container down (off load from vehicle)	5 min
Time to drive between containers	5 min
Waste Tonnages (per day)	30 Tonnes
Container volume (m3)	6 m3
Container payload (Tonnes)	5 Tonnes
Calculations	
Number of containers filled/ trips per day	6.0
Total collection time in minutes (8hrs x 60min)	480 min
Off route time	10 min
Time to and from depot	10 min
Available collection time in minutes	460 min
Total time per container (collect, transport, disposal and return)	70 min
Possible trips/vehicle/ day (based on available time)	6.6

Fleet Calculation Model	
Required trips per day equal	6.0
Number of vehicle required equals	0.9
Therefore one (1) vehicle is required	1

It is important that the most appropriate collection vehicles are used for the specific task and geographical terrain.

Maintenance schedules must be adhered to and roadworthiness of vehicles ensured, where applicable in order to ensure a reliable waste collection service.

It is therefore important that there is a proper assessment of the logistics and equipment requirements, to ensure that the appropriate and applicable equipment / vehicles are selected and that the overall system functions well and delivers at an acceptable level of service to all households.

6.8 Waste Information System

The Integrated Pollutant and Waste Information System (IPWIS) is intended to provide the public, business, industry and government with access to information on the management of waste, by capturing routine data on the tonnes of waste transported, treated, landfilled and recycled on a monthly and annual basis. The implementation of an IPWIS follows requirements by the NWMS (2011) in terms of monitoring and reporting and can only be done if the waste management activities are in place in terms of structure, systems, personnel, infrastructure and services.

It is important to collect waste data because the data can be used to:

- support local planning, in particular the development of integrated waste management plans;
- support budgeting for waste management services and facilities;
- support effective operation of waste management facilities, e.g. waste disposal facility, transfer station;
- assist with the implementation of effective waste reduction and reuse initiatives;
- assist with local, provincial and national reporting obligations;
- monitor the effectiveness of local waste management and waste minimisation initiatives; and
- capacitate local communities through providing public access to information.

The SBM is responsible for the waste quantities generated within its boundaries and therefore developed their own WIS. It remains a municipality's responsibility to make sure that waste information submitted to the IPWIS is correct.

All data should be captured and stored electronically. This will facilitate efficient data management and will enable SBM to easily feed information into the IPWIS and for future planning purposes. This is considered a low priority project.

The successful implementation of an IPWIS will involve the following steps by SBM:

- Step 1: Data Collection
- Step 2: Data Capture
- Step 3: Submission of data to IPWIS
- Step 4: Verification data

These steps are discussed and depicted schematically in Figure 17 and Figure 18 below. The resources required in each step are also outlined.

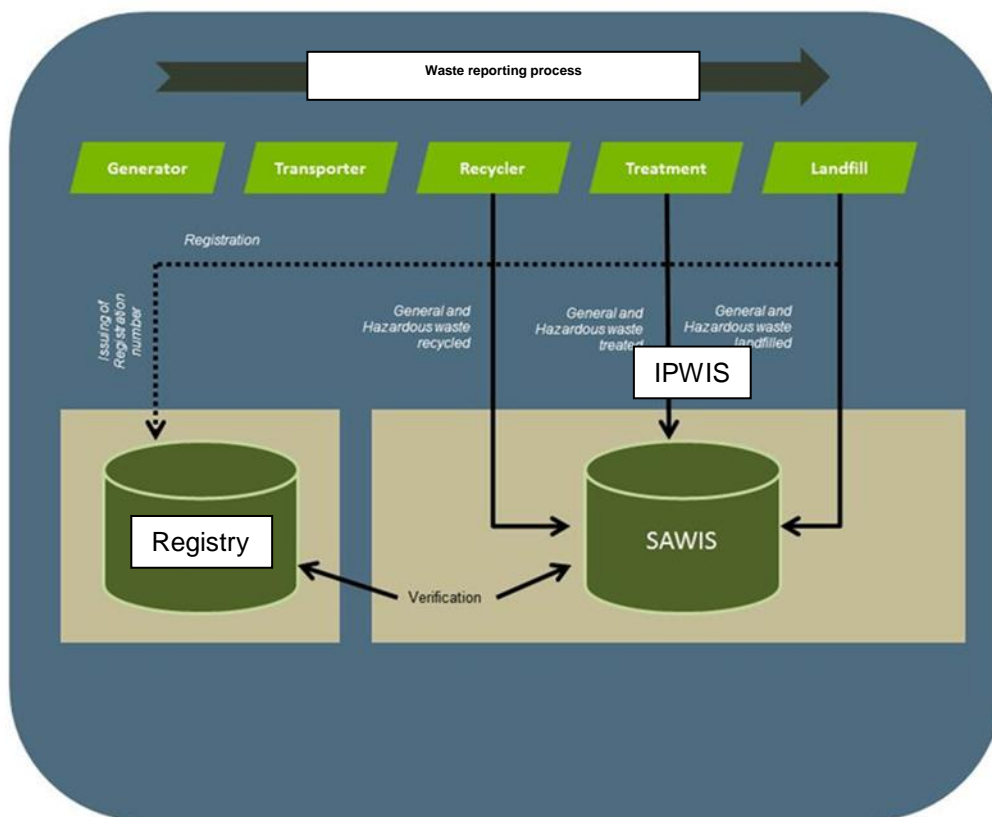


Figure 17: Waste reporting process

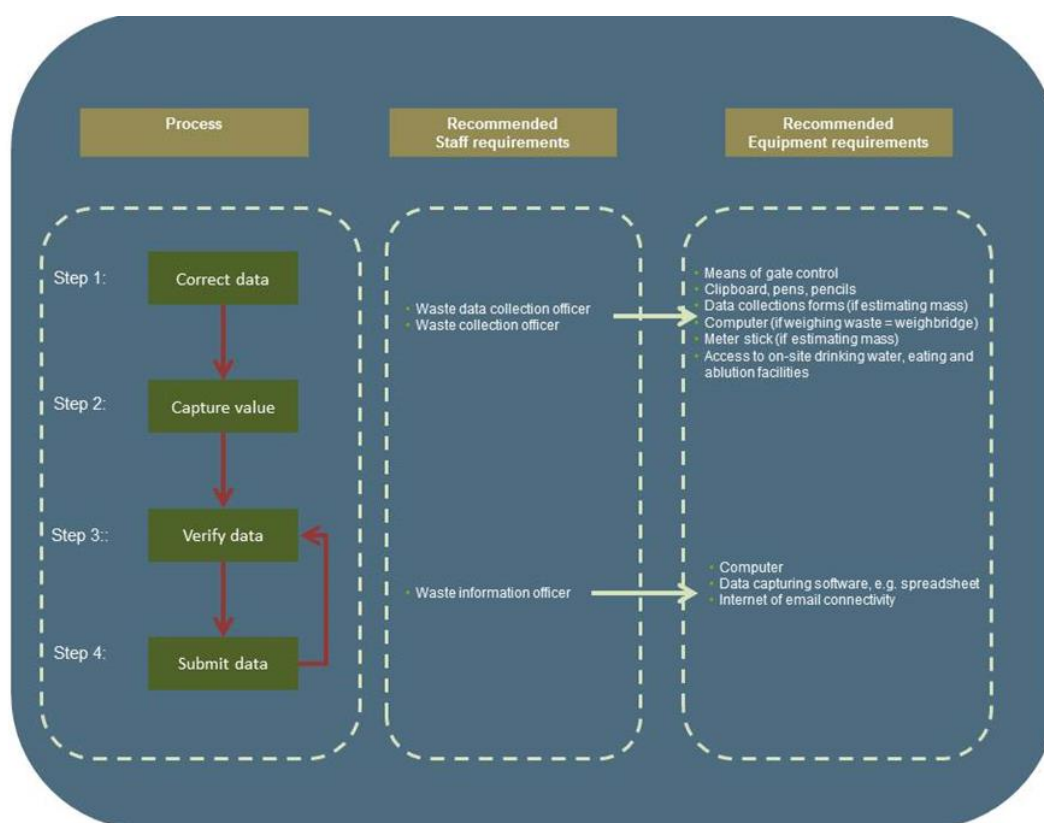


Figure 18 : IPWIS Steps Implementation Process

6.9 Education and Awareness

A three year education and awareness strategy needs to be devised and implemented. Part of this would include ensuring communities are informed about the health risk of illegal dumping which is part of the implementation strategies of the NWMS (2011).

With the assistance and involvement of local media and communication organisations, waste management and the role of the community would be covered.

This is considered a high priority project as it is a critical part of improving the handling of waste management in the SBM. If waste is to be well managed in the municipality, it will require active participation of the community. SBM will also need to include information on the management of hazardous waste in their education and awareness programme.

Table 21: Waste and Education Strategy

Waste and Education Awareness Strategy	
Project Description	<p>The SBM should develop a Public Awareness/Education Strategy aimed at promoting awareness over waste management related issues within the SBM. The strategy should, in particular, focus on bringing to the attention of residents residing in the SBM their applicable waste management By-Laws</p> <p>The strategy should be focused on identifying priority focus groups within the SBM to target during active awareness campaigns. Homeowners and lawful occupiers of homes within the SBM should be the primary focal point of the</p>

Waste and Education Awareness Strategy	
	<p>campaign. Schools and businesses within the SBM should be the secondary focus of the campaigns.</p> <p>Different communication mediums (Television, radio, posters, billboards, flyers) should be identified and evaluated, in terms of their anticipated effectiveness, in the development of the strategy.</p> <p>The required strategy should make allowance for an initial focused six months campaign roll out. Thereafter, it is recommended that bi-annual campaigns be undertaken in each respective town to ensure that there is a constant awareness amongst SBM residents over waste management issues and achievements by the SBM.</p>
Project Objective	<p>To improve compliance by the SBM residents to Waste Management By-Laws. In particular, the potential penalties relating to illegal dumping should be clearly communicated.</p> <p>The project will ultimately be aimed at addressing the following key issues:</p> <ul style="list-style-type: none"> • Reducing the level of illegal dumping and littering; • Separation of waste in different bins at the transfer station; • Waste Separation at source; • Dangers of scavengers; • Impact of waste in regards to the environment and human health; • Importance of having a waste infrastructure; • Shifting the mind-set of residents in relation to issues to waste management.
Responsibility	SBM
Project Period	<p>Development of Waste Education and Awareness Strategy by SBM and roll out of first active campaign – six months.</p> <p>Bi-annual awareness campaigns to be run by SBM in respective towns on an on-going basis (Operational Budget).</p>

6.10 General

The following general gaps amongst others were identified in the SBM:

- No community drop-off centres available for recyclable items.
- Separation of waste at source: Two-bag collection system is implemented in Langebaan. This system should be extended to the rest of SBM.
- No known co-operatives in place to aid recycling initiatives.
- Chipping of garden waste at Langebaan landfill.
- No internal market for builders' rubble.
- Insufficient human resources due to vacant and unfunded critical posts (e.g. driver/workers).
- Inadequate law enforcement and services to prevent illegal dumping, often from outskirts of informal settlements
- Some fleet vehicles are old and/or in poor condition

- Waste management plans are not available for businesses / industries / new developments
- Collection vehicles travel large distances to landfill despite presence of waste transfer stations.
- Draft Waste policy developed.
- Operational compliance challenges include insufficient buffer at Langebaan waste disposal facility.
- Remaining airspace at waste disposal facility is unknown.
- Waste transfer stations primary use is disposal of mixed waste.
- Tyres are dumped illegally on occasion
- Limited education and awareness campaigns.
- Inadequate resources (personnel, equipment)
- Inadequate provisions are made on the proposed organisational structure for waste management by-law enforcement.
- Irregular external auditing of SBM waste disposal facilities and waste transfer stations as per license/ permit/ operating conditions

7 Desired end state

7.1 Setting strategic goals, targets and indicators

The desired end state entails identifying priorities and goals that a municipality wishes to attain with regards to waste management. Using the information collected on the historical and present waste management situation, strategic goals for the IWMP were developed. These aim to address the gaps and needs of the community and more importantly should respond to the Waste Act requirements. A program on how these will be attained will be developed as an implementation plan. The strategic goals are based on relevant waste legislation, regulations and policies and are guided by the waste management hierarchy principles. Targets such as collection, recycling, recovery and disposal are set for waste management services. Setting of goals, objectives and targets takes into consideration the municipal response to the goals and targets set in the National Waste Management Strategy.

The National Waste Management Strategy provides a set of goals that municipalities must achieve in the next five years in order to give effect to the Waste Act. It contains an action plan with various targets to be achieved by municipalities in the next five years until 2020.

Goal 1: Promote recycling and recovery of waste

To implement sustainable waste minimisation, reuse, recycling and recovery programmes through strategic interventions including the promotion of composting, waste-to-energy and other reuse and recycling initiatives supported by introduction of waste separation at source programmes. Programmes should contribute towards uplifting the quality of life of the people within the municipality by ensuring a clean environment and by identifying, promoting and supporting potential job opportunities within the sector

Objectives:

- Establish Community drop-off centres with skips/containers for different waste streams at municipal facilities.
- Separation or segregation of waste stream at source to reduce the waste disposed to landfill by 20% (17 130t per year).
- Encouragement of co-operatives responsible for recycling and implementation of appropriate economic instruments and other financial incentives.
- Reuse of garden waste and building material.
- Develop waste avoidance guidelines.

Target:

- Short term - 20% reduction of waste to landfill by 2018
- Medium term – 30 % reduction of waste to landfill by 2019
- Long term – 40% reduction of waste to landfill by 2020

	Focus Area	Current Status	Mitigation Measures	Desired State	Implementation Phases			Indicative budget (OB = Operational Budget)			Priority level	Possible source of funding	Cash flow forecast						Completion date	Status
					R			Thousand					R							
					Thousand			Thousand												
					1	2	3	1	2	3	High / Medium / Low	Internal / External / Private	2016/17	2017/18	2018/19	2019/20	2020/21	2021 - 2030	By when does the project need to be completed	New/ Approved/proposed
1	Community drop-off centres for recyclable material	No community drop-off centres for recyclable items. Vredenburg MRF contractor (Wastegro) in place.	Establish drop-off centres for all recyclables materials at existing waste infrastructure (e.g. waste transfer stations) for plastic, paper, glasses, builder's rubble, etc. Identify and establish drop off points at public offices within each cluster	6 Community drop-off centres with skips/containers for different waste streams at SBM landfill and other Drop off points at public offices within each cluster	Provide 6m ³ / 30m ³ containers for recyclable material at existing waste infrastructure. Provide 1000l bins for recyclable material at public offices per cluster. Develop collection plan as a result of drop off patterns.	Inform the community of this service	Implement	OB	OB	OB	M	Internal		50	40	30	20	10	2017	New

[illegible]

	Focus Area	Current Status	Mitigation Measures	Desired State	Implementation Phases			Indicative budget (OB = Operational Budget)			Priority level	Possible source of funding	Cash flow forecast						Completion date	Status
					R			R					R							
					Thousand			Thousand					Thousand							
					1	2	3	1	2	3	High / Medium / Low	Internal / External / Private	2016/17	2017/18	2018/19	2019/20	2020/21	2021 - 2030	By when does the project need to be completed	New/ Approved/proposed
					this initiative e.g. collection and															
4	Reuse of garden waste and building rubble	Chipping of garden waste at Vredenburg landfill.	SBM should investigate the reuse of building rubble and undertake market survey (both internal and external). SBM should investigate composting of garden waste. Appoint EPWP workers to assist with waste recovery. Appoint a recycling contractor to oversee project	Equipment and facilities that are adequate for: Composting: Chipper Tractor with bucket loader or front end loader Building rubble: Crushed material to be used as cover material	Feasibility study to determine the economic viability for composting and the market for building rubble. Engage private biogas initiative to understand feedstock requirements.	Design and construction of facilities.	Operation and management of facilities.	200	1 000	OB	H	Internal	100	200	500	500	20	20	2017	New
5	Build capacity to improve waste recovery initiatives	Limited waste recovery initiatives implemented	Appoint EPWP workers to assist with waste recovery. Appoint a recycling contractor to oversee project Establish a waste forum for all the role players in SBM	Increased waste recovery	Determine role players	Develop institutional capacity within SBM (municipality/ private sector/ entrepreneurs)						Internal	100	150	150	150	150	200	2017	

Goal 2: Ensure the effective and efficient delivery of waste services

To promote and ensure effective delivery of waste services to all waste generators within the municipalities by extending appropriate waste services to all un-serviced areas and continually improving the level of service given in a safe and clean environment.

Objectives:

- Funded and filled posts.
- Businesses/industries responsible for waste services (receptacles)
- Community based services should be rendered to areas where the municipality have no capacity
- No illegal dumping

Target:

- All households within the municipality must receive a basic level of waste service according to waste level National/Provincial standards in safe and clean environment.

	Focus Area	Current Status	Mitigation Measures	Desired State	Implementation Phases			Indicative budget (OB = Operational Budget) R Thousand			Priority level	Possible source of funding	Cash flow forecast R Thousand						Completion date	Status
					1	2	3	1	2	3			2016/17	2017/18	2018/19	2019/20	2020/21	2021 - 2030		
1	Institutional arrangement	New organisational structure is approved in 2013. Insufficient human resources due to vacant and unfunded critical posts (e.g. driver/workers).	Funding of critical posts. Filling of vacant posts. Continuous training of personnel. Review Organisational structure (and/or certain post profiles) to include law enforcement activities; and to include T14 level Technician to assist with waste management operations.	Institutional capacity and trained human resources to effect all aspects of waste management services	Source funding for critical posts	Appoint personnel for new and vacant post	Continual development and training	OB	2 000	50	M	Internal		1 000	500	50	50	50	2017	New
2	Illegal dumping	Inadequate law enforcement and services to prevent illegal dumping (cleared by SBM, often from outskirts of informal settlements)n	Provide a waste collection service for indigent areas in SBM Train/Appoint personnel for law enforcement.	No illegal dumping	Investigate a waste collection model for indigent areas Train personnel in	Implement a waste collection model for indigent areas in SBM Develop programme	Erect signs at hot spots prohibiting illegal dumping.	OB	OB	OB	H	100	1 000	1 000	1 500	1 600	1 700	5 000	2017	Ongoing

	Focus Area	Current Status	Mitigation Measures	Desired State	Implementation Phases			Indicative budget (OB = Operational Budget)			Priority level	Possible source of funding	Cash flow forecast						Completion date	Status
					1	2	3	1	2	3			2016/17	2017/18	2018/19	2019/20	2020/21	2021 - 2030		
			Enforce new by-laws and investigate/determine the hot spots. Determine and monitor hot spots. Educate community. Set up sign boards prohibiting illegal dumping and where waste can be disposed of legally		law enforcement. Enforce new by-laws. Educate community. Identify hot spots and develop clean-up plan to address existing illegal dumping by waste collection drivers	to address illegal dumping. Cooperation with relevant department (building) with regards to new developments project waste management requirements.														
3	Route planning	Refuse collection routes per service area are planned per day	Revisit (redesign) and Implementation of a GIS route planning model	Proper GIS route planning	Develop detail route plans per service area	Communicate new route plans	Implement	OB	OB	OB	M	Internal	-	50	50	10	10	10	2017	New
4	Fleet	Some fleet vehicles are old and/or in poor condition	Replace old fleet with the appropriate vehicles and increase number of vehicles. Diversify fleet for specific use.	Sufficient and maintained fit-for-purpose vehicles available 8 hours per day	Dispose of unrepairable vehicles	Determine the right fit vehicles for SBM	Determine funding for vehicles Source vehicles				L	Internal		600	700	7500	800	850	2019	
5	Businesses/ industries/ New developments	Waste management plans are not available for businesses / industries / new developments	Develop waste management plan	Waste Management plans	Determine businesses/ industries/ new developments which do not comply	Educate businesses/ industries/ new developments	Issue target date for compliance				L	Private	OB	OB	OB	OB	OB	OB	OB	
6	Collection efficiencies	Collection vehicles travel large distances to landfill despite presence of	Move towards transfer stations model	Implementing a second shift Temporary storage of waste at	Feasibility study to determine the implement a 2 nd shift	Appoint service provider for transfer stations		100			M	External	100	2 000	2 200	2 300	2 400	2 500	2017	New

[illegible]

Goal 3: Ensure that legislative tools are developed to deliver on the Waste Act and any other applicable legislation

To ensure that legislative tools are developed and enforced.

Objectives:

- Implemented waste management policy
- Implemented by-laws

Target:

- To prevent illegal dumping increase enforcement of by-laws by 20%.

	Focus Area	Current Status	Mitigation Measures	Desired State	Implementation Phases			Indicative budget (OB = Operational Budget) R Thousand			Priority level	Possible source of funding	Cash flow forecast R Thousand				Completion date			Status
					1	2	3	1	2	3			2016/17	2017/18	2018/19	2019/20	2020/21	2021 - 2030	By when does the project need to be completed	
1	Waste management policy	Draft Waste policy developed.	Approve waste management policy.	Implemented waste management policy	Municipal approval	Implement waste management policy	Align waste management services	OB	OB	OB	H	Internal	-	20	OB	OB	OB	OB	2016	Proposed
2	Waste By-law	Outdated by-laws	Update by-laws	Implemented by-laws	Update by-laws and Municipal approval	Promulgation of by-laws	Enforcement of by-laws	OB	OB	OB	H	Internal	-	50	50	50	50	50	2015	Approved

Goal 4: Sound budgeting and financing of waste management services

Sound budgeting and financial management for waste management services to ensure that revenue expenditure for all services (or service categories) equals the revenue generated.

Objectives:

- Tariffs should be developed for all (new) waste management activities.
- The Municipality must be able to determine its economic sustainability and therefore establish long-term priorities

Target:

- Cost reflective tariffs to be implemented by 2017/2019

	Focus Area	Current Status	Mitigation Measures	Desired State	Implementation Phases			Indicative budget (OB = Operational Budget) R Thousand			Priority level	Possible source of funding	Cash flow forecast R Thousand						Completion date	Status
					1	2	3	1	2	3			2016/17	2017/18	2018/19	2019/2020	2020/2021	2021 - 2030		
1	Tariffs	SBM has an approved tariff structure for waste disposal at the waste disposal facility, collection and removal	Undertake detailed financial investigation to determine the non-payment for waste management services rendered as well as services with an over-recovery.	Tariffs should be developed for all waste management activities to recover costs.	Review tariff structure. Introduce new tariffs for services rendered for free or new services offered.	Approval and implementation of amended tariff structure.	N/A	OB	OB	OB	H	Internal	N/A	50	50	50	50	50	2016	Approved
2	Cost recovery	Disparity between income and expenditure for refuse removal and waste disposal facilities.	Enforce approved tariffs for waste management services rendered to improve collection rates.	Recovery of cost for waste management services rendered	Bill customers timeously.	Inform non-paying customers of potential cessation of service provision.	-	OB	OB	OB	H	Internal	OB	OB	OB	OB	OB	OB	OB	2015

Goal 5: Ensure the safe and proper disposal of waste

To treat and safely dispose of waste through Best Practicable Environmental Option (BPEO) interventions aimed at saving landfill airspace and reducing the potential negative impacts on the environment;

Objectives:

- Develop and implement a waste treatment and disposal strategy that will include but not limited to the following:
 - Compliance of all waste treatment and disposal facilities with relevant legislation for their development and permitting, operation and closure.
 - Addressing long term capacity needs of the municipality.
 - Explore alternative treatment and/or disposal options.

Target:

- The percentage increase in volume of waste disposal to landfill should not exceed its potential population.

	Focus Area	Current Status	Mitigation Measures	Desired State	Implementation Phases			Indicative budget (OB = Operational Budget)			Priority level	Possible source of funding	Cash flow forecast						Completion date	Status
								R					R							
					1	2	3	1	2	3	High / Medium / Low	Internal / External / Private	2016/17	2017/18	2018/19	2019/20	2020/21	2021 - 2030	By when does the project need to be completed	New/ Approved/proposed
1	HCRW	HCRW waste is dumped illegally on occasions	Ensure that HCRW waste is reported to the relevant authorities if disposed of illegally.	Appropriate disposal of HCRW	Report to and coordinate with relevant authorities	The relevant authority should facilitate the process.		-	-	-	H	External							2017	-
2	Hazardous Waste	Hazardous waste is dumped illegally on occasions	Ensure that hazardous waste is reported to the relevant authorities if disposed of illegally.	Appropriate disposal of hazardous waste	Report to and coordinate with relevant authorities Implement a hazardous waste awareness campaign	Establish an environmental awareness and education programme and hotlines	-	-	-	-	H	External	-	-	-	-	-	-	2016	-
3	Langebaan waste disposal facility	Has fatal flaws Remaining airspace is unknown. Used for garden waste and builders rubble	SBM should take steps to formalise the site's use as a transfer station.	Full compliance with relevant legislation and permit conditions. Rigorous implementation of waste minimisation initiatives.	Application process to amend land use rights and permit for use as waste transfer station. Carry out a landfill provision for the closure of the site according to new regulation (R636).	Design and construction of transfer site facilities (Planning) Operation and management of disposal facilities in accordance with the permit conditions and relevant legislation.		200	8 000	OB	H	External (MIG)							2016	New

[illegible]

Goal 6: Education and awareness

To raise awareness about waste management, including treatment and disposal impacts and options, and building capacity in support of waste minimisation, reuse, recycling and recovery initiatives;

Objectives

- Develop and implement a communication and public awareness plan that encourages minimisation, reuse, recycling, and recovery and discourages illegal dumping and littering, thereby minimising the negative impacts of waste on the environment including the quality of life of people themselves. This IWMP will include among others the following:
 - Capacity building programmes for internal members of staff within the municipality.
 - Awareness and education programmes for the broader community.
 - Mechanisms of forming partnerships with different stakeholders in order to expand the reach and impact of the awareness campaigns undertaken.

Targets

- 25% of schools within the municipality have established waste minimisation programmes and/or other waste related projects by 2018.
- Initiate programmes that translate the objectives of provincial and national programmes geared towards encouraging cleaner environments and responsible behaviour towards the environment such as the Bontle ke Botho and the ‘Cleanest Town’ competitions to other stakeholders and the broader community.
- Initiation and operation of other awareness campaigns involving an additional 20% of the population of the municipality by 2018.

	Focus Area	Current Status	Mitigation Measures	Desired State	Implementation Phases			Indicative budget (OB = Operational Budget)			Priority level	Possible source of funding	Cash flow forecast						Completion date	Status
								R					R							
					Thousand			1	2	3			High / Medium / Low	Internal / External / Private	2016/17	2017/18	2018/19	2019/20		2020/21
1	Education and awareness	Limited education and awareness campaigns. Inadequate resources (personnel, equipment)	Implementation of an increased clean-up campaigns, education awareness at schools and the community regarding the impact of waste. Appoint a Communications Officer to manage education and awareness campaigns. Add waste management awareness to SBM communication strategy	A well-educated and well-informed community in regards to the impacts of waste on their health and the environment.	Drafting and approval of education and awareness plan. Development of Communications Officer's job specification. Implementation of waste minimisation banners on fleet	Appointment of Communications Officer. Implement education and awareness plan. Identification of and planning for locations to erect waste minimisation signage.	Erection of waste minimisation signage at entrances to towns.	OB	OB	-	H	Internal	50	100	100	100	100	100	Ongoing	New

Goal 7: Compliance and enforcement

To achieve compliance to the municipal waste management by-laws through effective enforcement including prosecution in cases of non-compliance.

Objectives:

- Enforcement of waste by-laws and relevant legislation.
- Accurate record and efficient data management of waste volumes and waste types collected, recycled and disposed.

Target:

- Achieve 80% of compliance by all waste management activities

	Focus Area	Current Status	Mitigation Measures	Desired State	Implementation Phases			Indicative budget (OB = Operational Budget)			Priority level	Possible source of funding	Cash flow forecast						Completion date	Status
								R					R							
					1	2	3	1	2	3	High / Medium / Low	Internal / External / Private	2016/17	2017/18	2018/19	2019/20	2020/21	2021 - 2030	By when does the project need to be completed	New/ Approved/proposed
1	Enforcement of relevant legislation	Inadequate provisions are made on the proposed organisational structure for waste management by-law enforcement.	Provide for law enforcement function on the organisational structure. Law enforcement as a function should be addressed as a function of education and awareness. Identify and train existing personnel in by-law enforcement.	An institution where there enough resources to enforce waste management by-laws.	Revise approved organisational structure to include enforcement personnel.	Approve amended organisational structure. Appoint enforcement personnel.	Enforce relevant legislation	50	OB	300	M	Internal	OB	OB	OB	OB	OB	OB	Ongoing	
2	Integrated Pollutant and Waste Information System (IPWIS)	An IPWIS has been implemented and SBM is reporting waste volume and characteristics monthly.	Expand waste information recorded collection to include recyclable materials (from MSW) reclaimed off landfills.	Accurate record and efficient data management of waste volumes and waste types collected, recycled and disposed.	Expand specificity of IPWIS.	Monitoring	Monitoring	OB	OB	OB	L	Internal	-	OB	OB	OB	OB	OB	Ongoing	New
3	Audits	Auditing of SBM waste disposal facilities and waste transfer stations as per license/ permit/ operating conditions are	Implement audit recommendations to ensure compliance Report audit findings to relevant authority	Compliant SBM waste disposal facilities and waste transfer stations.	Conduct regular internal audits and appoint competent agent to undertake external audits of SBM waste	Implement recommendations of audits.	-	100	-	-	H	Internal	100	100	100	100	100	100	Ongoing	

[illegible]

8 Communication and Stakeholder Participation

8.1 Consultation Process Summary

A public notice (Figure 19) was given in the *Weslander*, dated 26 January 2017 allowing for a public participation period of 30 days from 26 January until 26 February 2017, and the SBM's website, www.sbm.gov.za that the municipality intends to:


Adopt the 3rd Generation Integrated waste Management Plan (IWMP).

A copy of the IWMP was available for inspection during office hours at the following places:

- SBM Libraries
- SBM offices
- Municipal website: www.sbm.gov.za

This item was also standing item on all ward committee meetings taken place during the 30 day review period.

No written comments were received from the public during the published review period of 30 days.

 SALDANHA BAY MUNISIPALITEIT MUNICIPALITY uMASIPALA <small>T: (022) 701 7000 • F: (022) 715 1518 • mun@sbm.gov.za • www.sbm.gov.za</small>		
KENNISGEWING VIR PUBLIEKE DEELNAME Geïntegreerde Afvalbestuursplan <p>Kennis word hiermee geskied in terme van die bepalings van artikel 13 en 21 van die Wet op Plaaslike Regering: Munisipale Stelsels Wet 32 van 2000, saamgelees met artikel 121 van die Grondwet van die Republiek van Suid-Afrika, 1996 en die Wet op Nasionale Omgewingsbestuur Afval Wet 59 van 2008 soos gewysig, gegee dat die Saldanhabaai Munisipaliteit van voorneme is om:</p> <p>Die 3de Generasie Geïntegreerde Afvalbestuursplan te aanvaar.</p> <p>Die algemene doel is om die munisipaliteit by te staan in die proses van beplanning (behoeftebepaling, hulpbrontoekenning), implementering en evaluering van die afvalbestuur funksies oor 'n tydperk van 5 jaar op 'n geïntegreerde wyse.</p> <p>'n Afskrif van die Geïntegreerde Afvalbestuursplan is beskikbaar gedurende kantoor ure by die volgende plekke:</p> <ul style="list-style-type: none"> • Saldanhabaai Munisipale Biblioteke • Saldanhabaai Munisipale kantore • Munisipale webwerf: www.sbm.gov.za <p>Die dokument sal beskikbaar wees gedurende kantoor ure ter insae en kommentaar, vir 'n tydperk van dertig (30) dae vanaf die datum van hierdie publikasie.</p> <p>Vertoë word hiermee ingewag en moet skriftelik binne 30 dae vanaf die datum van die publikasie na die onderstaande adres, of via e-pos aan mun@sbm.gov.za, ingedien word. Verdere navrae kan ook gerig word aan die Bestuurder: Vaste Afval (Mnr. David Wright by David.Wright@sbm.gov.za).</p> <p>Mr. J Marais Waarnemende Munisipale Bestuurder Saldanhabaai Munisipaliteit Privaatsak X12 Vredenburg 7380</p>	PUBLIC PARTICIPATION NOTICE Integrated Waste Management Plan <p>Notice is hereby given in terms of the provisions of section 13 & 21 of the local government Municipal Systems Act 32 of 2000 read with section 121 of the Constitution of the Republic of South Africa, 1996 and the National Environmental Management Waste Act 59 of 2008 as amended, that the Saldanha Bay Municipality intends to:</p> <p>Adopt the 3rd Generation Integrated Waste Management Plan (IWMP).</p> <p>The general purpose is to assist the municipality in the process of planning (needs determination, resource allocation), implementation and evaluation of the waste management functions over a period of 5 years in an integrated manner.</p> <p>A copy of the IWMP is available for inspection during office hours at the following places:</p> <ul style="list-style-type: none"> • Saldanha Bay Municipal Libraries • Saldanha Bay Municipal offices • Municipal website: www.sbm.gov.za <p>The document will be available for scrutiny and comments for a period of thirty (30) days from the date of this publication.</p> <p>Representations are hereby invited and must be lodged in writing within 30 days from the date of the publication to the address below, or via email to mun@sbm.gov.za. Further enquiries can also be directed to the Manager: Solid Waste (Mr. David Wright at David.Wright@sbm.gov.za).</p> <p>Mr. J Marais Acting Municipal Manager Saldanha Bay Municipality Private Bag X12 Vredenburg 7380</p>	ISAZISO SENXACHEBA YOLUNTU IsiCwangciso soLawulo Lwenkunkuma esiHlanganisiweyo <p>Isaziso senziwe ngokwemiqathango yecandelo 13 & 21 kwi Nkqubo zikaMasipala weNgingqi 32 ka 2000 ifundwa necandelo 121 leSiseko se Rhiphabliki yoMzantsi Afrika, 1996 kunye noMthetho weSizwe woLawulo lweNkunkuma lokusiNgqongileyo 59 ka 2008 Njengoko ilungisiwe, okokuba uMasipala wase Saldanha unenjongo zo:</p> <p>Kwamkela Isicwangciso soLawulo Lwenkunkuma esiHlanganisiweyo (ILLH).</p> <p>Injongo jikelele kukunceda umasipala kwinkqubo yocwangcisa (ukuchonga iifunono, ukwaba izixhobisi), ukuphunyezwa noku vavanywa komsebenzi woLawulo Lwenkunkuma kwiminyaka engapha kwe 5 ngesimo esidityanisiweyo.</p> <p>Ikopi ye ILLH iyafumaneka ukuze ihlowe njexesha leyuze ze ofisi kwezi ndawo zilandelayo:</p> <ul style="list-style-type: none"> • Kumathala (layibrari) kaMasipala weSaldanha • Kwi Ofisi sikaMasipala weSaldanha • iWebsayithi kaMasipala: www.sbm.gov.za <p>Oluxwebhu luyakufumaneka ukuze libonaku hlowa kwaye nokuba kuvakaliswe izimvo kwithuba elingange ntsuku ezingamashumi amathathu (30) ukusukela kumhla wolushicilelo.</p> <p>Kumenywa izimvo kwaye kufuneka zifakwe ngokubhalwa Phakathi kwentsuku ezingama 30 ukusukela kumhla wolushicilelo kule dilesi ingezantsi okanye nge imeyile ku mun@sbm.gov.za. Engenye imbuzo ingabhekiswa kuMphathi : weNkunkuma (Mnu. David Wright ku David.Wright@sbm.gov.za).</p> <p>Mnu. J Marais Mngcinisihlalo Mphathi Masipala Masipala waseSaldanha Private Bag X12 Vredenburg 7380</p>

Serve, Grow and Succeed Together

Figure 19: IWMP Public Participation Notice

Implementation Instruments

8.2 Partnerships

The costs and needs of a sustainable waste management system are huge and hence require input and participation from its varied stakeholders. It is thus important for municipalities to form partnerships with different stakeholders to try and sustain and promote good waste management practices for all their community members. There are a wide range of partnerships that can be formed. A few examples are given below:

Public-public Partnerships: This is a partnership between two public sector institutions or organisations where neither partner seeks profit from the partnership. A typical example of such a partnership could be in cases of operating regional waste facilities. All concerned municipalities would come together in the joint development of such a facility and share the costs.

Public-private partnerships: This is normally a partnership between a public sector institution/organisation and a private company or party. The private company or party takes the financial risks for the project including capital costs, designing and building the facility as well as the operational costs. The land typically belong to the public entity with the fixed asserts sponsored by the private entity but ultimately becoming state property.

Public-community partnerships: This partnership includes members of the community receiving the service forming part of the partnership with the public entity giving the service. A typical example (see Figure 20) in waste management is when community based contractors are involved in recycling programmes by among other collecting the recyclables which have been separated at source.

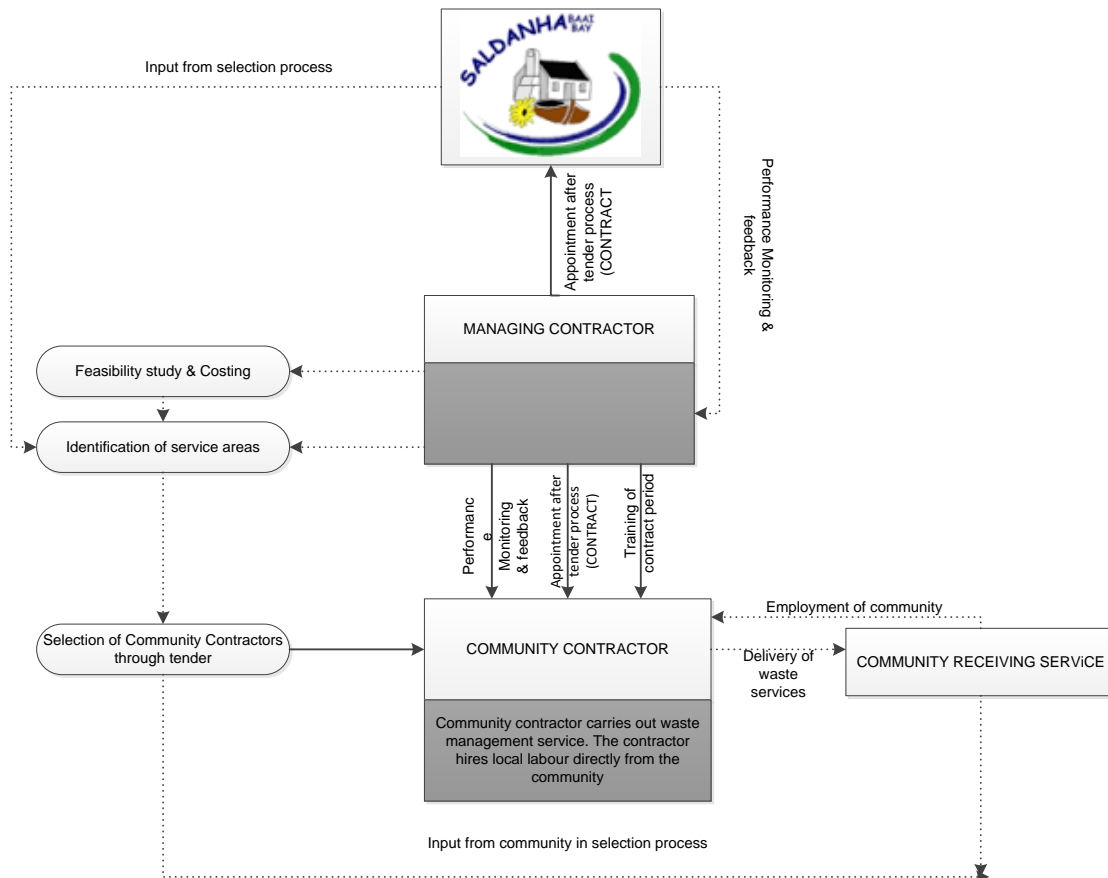


Figure 20: Institutional Strategy

The main purpose of an institutional strategy is to present a strategic plan on how to grow the institutional capacity of the Waste Management Division in line with its future plan. The institutional structure is designed to support the growth of Waste Management Services as further investment occurs, thereby ensuring that there is sufficient capacity to manage the work in the foreseeable future, in line with the strategy, the municipality should make provision for additional waste services due to population growth. The implementation of additional capacity should precede the demand for waste services to ensure the municipality has the required capacity once the additional workload realises.

As part of the future institutional strategy the Waste Management Division needs to develop an organisational structure that would have the ability to serve the future plan as specified above. Tasks that are required throughout to ensure sustainability and effective service provision of the department:

8.3 Legislative instruments: Development and enforcement of by-laws

A critical component to the implementation of the IWMP is the supporting legal framework. The following framework needs to support and guide the implementation of the objectives of the IWMP:

Waste Policy: A draft waste policy has been compiled for SBM. 'A policy outlines what a government ministry hopes to achieve and the methods and principles it will use to achieve them. A policy document is not a law but it will often identify new laws needed to achieve its goals'. It is important to note that it is critical to invite public and stakeholder input during the process of developing the waste policy.

By-Laws: The SBM by-laws are in the process of being approved by the Municipality. The by-laws will put in place the necessary institutional and legal frameworks that will enable SBM to achieve their aims. This should be in line with the departmental objective stated in the IDP to ensure that waste management by-laws are in place. Compliance monitoring of the by-laws will also need to be implemented.

This project is considered a high priority project as the development of waste policy provides the framework for waste management in the municipality and the by-laws provide the legislative power to enforce the goals in the waste policy.

8.4 Funding mechanisms

Financing of waste management services is dependent on accurate costing of the required services. The full cost of waste service provision is seldom understood by both municipal officials as well as the general public. This results in waste management services often being under budgeted and/or communities' reluctance to pay the rightful cost of the service. Tariffs should cover the costs of providing the services, but the charges are often set below actual costs. Currently the SBM tariffs provides opportunities for cross subsidisation between different waste management functions but disregards the actual costs of providing a specific service. Below are some of the interventions that can be implemented.

- Undertake on a full cost accounting exercise for waste management services to include aspects of collection, transportation, landfill, street cleansing, fee collection, debt payment and depreciation.
- Implementing recycling programmes will reduce the disposal costs and generate revenue for the municipality. The cost accounting exercise referred to above could include the costs of these recycling programmes against their gains in terms of real monetary returns as well as cost savings relating to increased landfill life span through saved air space.
- Increasing the service charges to correlate with the actual costs maybe a challenge to low income groups, given the current backlog specifically to those areas. The concept of Pay-as-you-throw may then be a better approach, where the service charge is proportional to the waste produced per household.
- The implementation of this IWMP can necessitate both capital and operational costs which can be funded through potential avenues listed below.

Table 22: Funding options

Capital	Operational
Own funding	Tariffs
Municipal Infrastructure Grant (MIG)	Rates
Consolidated Municipal Infrastructure Programme (CMIP) Equitable share	Equitable share
Extended Public Works Programme (EPWP) Carbon credits	Donor funding
Donor funding	Carbon credits
Financial institution (e.g. DBSA)	Product revenue
Public-private partnerships	
Provincial and National government allocations	

8.5 SBM responsibilities

8.5.1 Municipal Manager

The City Manager is ultimately responsible for ensuring that waste within his/her areas of jurisdiction is managed in accordance with legislative requirements of South Africa.

8.5.2 Waste Management Officer

The Waste Management Officer (WMO) designated in terms of Section 10 (3) of NEMWA, is responsible for ensuring that the dedicated waste management staff and the services provided by these staff meet the requirements of the Policy and are compliant with the legislation of South Africa. The WMO is also responsible for the coordination of waste management activities to ensure integration. It is the responsibility of all staff to adhere to all relevant legislation, including the IWM Policy, and this Plan.

8.5.3 Waste Management Section

The Waste Management Section is primarily responsible for strategic planning and policy formulation making it the core section to play the coordination and integration role within the SBM. Their specific roles will thus include the following:

- Integrated Pollutant and Waste Information System (IPWIS);
- Auditing to ensure that all SBM departments, Contractors and Agencies dealing with waste are in compliance with this plan;
- Compliance with applicable legislation must be monitored;
- Internal audits must become part of the SBM waste management plan to address compliance with applicable compliance;

- Accident and incident management and reporting; and
- Ensure that the SBM adheres to all national and provincial legal obligations.

8.5.4 Line Managers

Other line Departmental/Directorate Managers within the SBM where relevant will be responsible for:

- Ensuring that staff under their control is aware of the IWMP and that the mandatory training requirements of staff are fulfilled.
- Ensuring that where appropriate operational plans in relation to the implementation of the IWMP are developed and progress reporting in relation to same is undertaken.
- Assisting the Waste Management Section to make improvements to their waste management systems where accidents or incidents occur.

8.5.5 Stakeholder Responsibilities

Households and industry shall avoid negative impacts from waste on the environment and also play a role in terms of separation of waste at source, waste exchange and cleaner production. Changes in consumption patterns will reduce generation of waste and save our non-renewable natural resources. In terms of waste avoidance and minimization, the co-operation and additional effort of the manufacturers and producers in terms of “Cleaner Production and Sustainable Consumption” and “Extended Producer Responsibility” (EPR) initiatives, and participation by the consumers of goods as part of individual waste minimization effort is required. In this regard the responsibilities of residents, visitors or entities inside the SBM’s boundaries include the following:

- All stakeholders must avoid generating waste as far as possible;
- All residents, property owners, government departments, non-governmental or community service organizations, and business entities handling waste must be registered on the SBM waste information system.
- All entities and individuals engaging in commercial waste minimization and recycling activities inside SBM boundaries that will divert waste from landfill must be accredited and licensed by SBM to operate in the SBM’s boundaries;
- All events organized and hosted in the SBM must have a waste management plan that includes source separation and a provision for the cost of associated waste management services.
- Industrial and health care entities must have a contract with a registered service provider able to provide a service according to the nature of the waste that must be collected, and/or treated, and/or recycled, and/or disposed;
- Health care risk waste generators, transporters and facility operators must have a valid permit and/or licence issued by the SBM or the Provincial Government;
- Property owners, traders or businesses may only use the receptacles (once implemented) for their own use at the site and for the purpose it has been provided, or can apply for additional receptacles or enhanced services at additional cost;
- The occupant of a dwelling or property, manager of a facility, amenity or a business entity, or entrepreneur that generates waste, must ensure that recyclable waste is separated and stored in an approved container;
- The waste generator must transport recyclables or have these collected at own cost to a specially provided facility, where the recyclable materials must be placed in separate bulk containers or a separate area provided at the facility;

- Property owners of vacant land and occupants of occupied property are responsible for maintaining cleanliness and hygiene standards inside the boundaries of the property in terms of SBM's applicable by-laws. The SBM reserves the right to clean waste and overgrowth that accumulates on such land at the owner's expense at the cost of cleaning and disposing of the waste.
- Property owners and/or developers of land and buildings must provide for waste management infrastructure according to the SBM's guidelines, and must submit a waste management plan as part of the SBM's plans approval process.
- All relevant stakeholders in terms of the Action Plans set in this plan must develop operating plans and ensure regular reporting on progress of implementation of the plan to the Waste management section.

9 Implementation and Financial Plan

The projects identified are captured in 7.1 shows implementation phases and associated indicative budgets for each phase. The projects are also categorised as being of a high, medium or low priority.

10 Reporting and Monitoring

10.1 Monitoring of IWMP

An ongoing monitoring plan for the implementation of the IWMP detailed above should be developed. This monitoring constitutes an essential and integral part of the planning process

Performance and development indicators should be developed during the course of developing operating plans for the different sections responsible for waste management. The monitoring will focus on the short-term objectives of the IWMP to ensure that corrective action can be taken where necessary. Monitoring activities that should be considered include:

General issues

- Resource situation: budget allocations
- Human resources: Vacancies, skills and training;
- Payment for services: Tariff setting and collection thereof
- Rates of generation of waste, verified by the waste information system
- Registering of facilities on IPWIS and reporting.
- Reporting to provincial and national environmental departments.
- Illegal dumping and littering: amounts cleared and the costs involved.
- Legislation, regulations and by-laws are in place.
- Complaints regarding poor waste management.

Waste prevention and minimisation

- Annual reports of waste minimisation programmes and projects;
- Annual environmental reports on emissions to air, water and land;
- Achievement of targets for prioritised waste streams and pollutants;
- Information exchange and the establishment of waste minimisation clubs.

Collection and transportation

- Annual reports on the implementation of collection and transportation services.
- Payment received for waste collection and transportation services as against the actual cost for provision of these services.

Reuse, Recycling and Recovery

- Annual reports on waste reuse, recycling and recovery programmes and projects;
- Information exchange between stakeholders;

- Stakeholder forums coordinating new reuse, recycling and recovery activities;
- Social and environmental impacts of the implementation of new reuse, recycling and recovery initiatives.

Treatment

- Registration and licensing of waste treatment facilities;
- Auditing of waste treatment facilities by provincial authorities;
- Environmental performance and impact;
- Provision of adequate hazardous waste treatment facilities.

Disposal

- Registration and licensing of waste disposal facilities;
- Auditing of general waste disposal facilities by provincial departments;
- Environmental performance and impact;
- Provision of adequate hazardous waste disposal facilities;
- Management and control of salvaging at waste disposal facilities.

10.2 Communication and public participation plan

10.2.1 Public Review and Approval Process

The draft IWMP should be made available to the general public for their inputs by advertising in the local newspaper two weeks before the date of the public meeting.

Draft copies of the IWMP's should be placed for information purposes at places such as libraries and municipal offices for perusal by the public and give comments.

10.2.2 Approval Process for IWMP

The approval of the IWMP's will generally be as follows:

Local government will receive information and data directly from industry, will be responsible for monitoring the waste management activities within its area of jurisdiction, and will compile its own IWMPs (including a waste management implementation plan) to submit to provincial government MEC for consideration and approval.

Provincial government will receive all information and general waste data (including household hazardous waste) from local government. Hazardous waste information will be submitted directly to provincial government by industry. Provincial government will receive and approve the IWMPs from those industries that have their own waste treatment and disposal facilities. Provincial government is responsible for monitoring the implementation of waste management plans by local government and for undertaking those responsibilities that cannot be fulfilled by local government. Provincial government must compile and submit environmental and waste management plans to DEA, for consideration and approval by the Committee for Environmental Co-ordination (CEC). These plans

will comprise an overview of the general waste IWMP submitted to them by local government, a hazardous waste IWMP prepared by the province, as well as the waste management plans submitted by industry.

The national government, through the Department of Environmental Affairs (DEA), will receive aggregated information and data on waste generation, transportation and disposal from the provincial governments. DEA will receive the provincial environmental and waste management plans for approval by the Committee for Environmental Co-ordination (CEC). National government is responsible for monitoring the implementation of the IWMP by provincial and local governments, as well as industry, and for undertaking those responsibilities that cannot be fulfilled by provincial government.

10.3 Review of IWMP

The main objective for reviewing the IWMP is to ensure that it is implemented successfully. This IWMP is to be reviewed every five years in line with IDP requirements. Apart from reviewing the IWMP every five years the annual performance should also act as a reviewing mechanism wherein SBM should evaluate its progress and take steps in ensuring that it does not lack behind in reaching the goals and targets set out in the implementation plan.

11 References

1. Saldanha Bay Municipality, Draft Integrated Development Plan 2012 – 2017, Revision 3, 2015/2016.
2. Working with waste: Guideline on recycling of Solid Waste developed for DEA.
3. West Coast Industrial Plan.
4. Saldanha Bay Municipality Integrated Waste Management Plan, 2011

List of websites

www.environment.gov.za

www.sawic.org.za

www.statssa.gov.za

www.SBM.gov.za



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